

6760 (086.0)

June 9, 2000

Dear Interested Public:

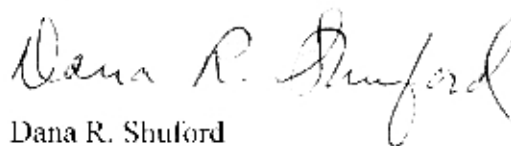
The Bureau of Land Management is proposing to implement Alternative 2 which was analyzed in EA (Environmental Assessment) No. OR-086-00-02. This alternative would entail: 1/the replacement of the culvert at Ginger Creek in the upper Nestucca River Watershed with a new structure designed to pass both fish and a 100-year storm event; 2/the restoration and enhancement of up to 9.5 miles of stream channel through the addition of large wood and rock by strategic placement by helicopter, heavy equipment or hand powered tools over a one to five year period; and 3/planting of native vegetation in access locations and in riparian areas. The project is approximately 13 air miles southeast of Tillamook Oregon, in Tillamook and Yamhill Counties, on land managed by the Tillamook Resource Area of the Salem District, Bureau of Land Management.

Enclosed for your review and comment is the Upper Nestucca Restoration and Enhancement Project EA, and Draft Decision Record and FONSI (Finding of No Significant Impact). I encourage you to provide substantive comments in writing regarding the proposed decision and FONSI on or before July 14, 2000 to Matt Walker, Project Lead, Tillamook Resource Area, 4610 Third Street, P.O. Box 404, Tillamook, Oregon 97141. **Comments received will be considered in the final decision which is expected to be issued in late July, 2000.**

Comments received in response to this Proposed Decision, including names and addresses of those who comment, will be considered part of the public record and will be available for public inspection. Also, names of those who comment may be published as an addendum to the EA. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

For additional information, contact Matt Walker at the above address or telephone (503) 815-1145.

Sincerely,

A handwritten signature in cursive script that reads "Dana R. Shuford". The signature is written in dark ink and is positioned above the printed name and title.

Dana R. Shuford  
Field Manager

Enclosure:(2)

EA #OR-086-00-02

Draft Decision Record / FONSI

## **ENVIRONMENTAL ASSESSMENT**

Upper Nestucca Restoration and Enhancement Project  
OR-086-00-02

June 9, 2000

USDI Bureau of Land Management  
Oregon State Office  
Salem District  
Tillamook Resource Area  
Tillamook and Yamhill Counties, Oregon

Responsible Agency: USDI Bureau of Land Management

Responsible Official: Dana Shuford, Field Manager  
Tillamook Resource Area  
4610 Third Street  
P.O. Box 404  
Tillamook, OR 97141  
(503) 815-1100

For further information, contact: Matt Walker, Team Leader  
Tillamook Resource Area  
4610 Third Street  
P.O. Box 404  
Tillamook, OR 97141  
(503) 815-1145

## **CONTENTS**

	List of Tables	Page 3
Chapter 1.0	Project Scope	Page 4
1.1	Project Location	Page 4
1.2	Background	Page 4
1.3	Purpose of and Need for Action	Page 6
1.4	Proposed Action	Page 12
1.5	Decision to be Made	Page 12
1.6	Issues, Units of Measure	Page 12
1.6.1	Fish and Fish Habitat (Major Issue)	Page 13
1.6.2	Vegetation Resources	Page 13
1.6.3	Soil Resources	Page 13
1.6.4	Water Resources	Page 13
1.6.5	Wildlife Resources	Page 13
Chapter 2.0	Alternatives	Page 14
2.1	Alternative Development	Page 14
2.2	Alternative Description	Page 14
2.2.1	Alternative 1 (No Action)	Page 14
2.2.2	Alternative 2 (Proposed Action)	Page 14
2.2.3	Alternative 3 (Action Alternative)	Page 20
2.2.4	Permits, Clearances and Surveys Required	Page 21
Chapter 3.0	Affected Environment and Environmental Consequences	Page 23
3.1	Introduction	Page 23
3.2	Fish and Fish Habitat (Major Issue)	Page 23
3.3	Vegetation	Page 31
3.4	Soil	Page 36
3.5	Water	Page 38
3.6	Wildlife	Page 45
3.7	Conformance With Land Use Plans, Policies, and Programs	Page 54
Chapter 4.0	Interdisciplinary Team Members	Page 57
Chapter 5.0	Consultation and Public Involvement	Page 57
	Glossary	Page 58

## Appendix Documentation

Appendix 1 - Upper Nestucca Restoration and Enhancement Map (Page 61)

Appendix 2 - Environmental Elements (Page 62)

Appendix 3 - Past, Present and Reasonably Foreseeable Future Actions (Page 70)

Appendix 4 - Matrix and Data for Documenting Environmental Baseline and Effects of Proposed Actions for Selected 6<sup>th</sup> Field Watersheds (Page 76)

Appendix 5 - Documentation of Consistency with Aquatic Conservation Strategy (Page 122)

Appendix 6 - Species List of Botanical Resources Possibly Occurring Within the Project Area Including Invasive Exotics/Noxious Weeds, Survey and Manage and 6840 Species (Page 130)

Appendix 7 - (Reserved for) Public Comments to the Environmental Assessment and Bureau Responses (Page 137)

**LIST OF TABLES**

## Chapter 1.0

Table 1 (Page 9)	Selected Habitat Indicators
------------------	-----------------------------

## Chapter 2.0

Table 2 (Page 18)	Trees Needed by Work Area and Their Potential Source
-------------------	--

Table 3 (Page 20)	Comparison of Alternatives for Selected Parameters
-------------------	--

## Chapter 3.0

Table 4 (Page 24)	Fish Species and Status within the Nestucca River Watershed
-------------------	---

Table 5 (Page 25)	Cold Water Species and Status Within the Willamina Creek Watershed
-------------------	--

Table 6 (Page 39)	Beneficial Uses of Water in the Upper Nestucca River Watershed
-------------------	--

Table 7 (Page 46)	Wildlife Species and Status (a List)
-------------------	--------------------------------------

## CHAPTER 1.0 PROJECT SCOPE

For the reader's convenience, terms in bold italics are defined in the Glossary.

### 1.1 Project Location

The project area is located within the Upper Nestucca River watershed on lands administered by the BLM (Bureau of Land Management). Watershed Analysis documents have been completed for the action areas described in this document. The lands in consideration are located in T.3.S. R.7.W., T.3.S. R.6.W. and T.4.S. R.7.W Willamette Meridian. The land use allocations for these lands are ***AMA (Adaptive Management Area)***, ***LSR (Late Seasonal Reserves)*** and ***RR (Riparian Reserve)***. Individual sites within this geographic area are mapped (Appendix 1) and described separately in section 2.2.2.

The restoration and enhancement portion proposed project area is located within a Tier 1 Key Watershed for anadromous fish production which is within the ***ESU (Evolutionarily Significant Unit)*** of the Oregon Coast Coho salmon, listed as threatened under the ESA (Endangered Species Act). In addition, haul routes associated with this project fall within the Oregon Coast Coho Salmon ESU and the Upper Willamette River Steelhead trout ESU.

Survey & Manage fungi have been identified within and/or near the proposed instream project area. This portion of the Nestucca River is a municipal watershed, and in an area designated as critical habitat for the marbled murrelet, spotted owl, and Oregon Coast coho salmon. There are domestic water supplies within the vicinity of the proposed action. This project lies within the BLM Class I, and IV Visual Resource Management categories. The Nestucca River is an Oregon Scenic Waterway and was found to be suitable for inclusion in the Federal Wild and Scenic River system with a tentative classification as "Recreational River".

Survey & Manage fungi, lichens and bryophytes were identified within the three blowdown patches proposed as a source of trees for instream projects. These patches in the Willamina Creek drainage are in a municipal watershed, and in an area designated as critical habitat for the marbled murrelet, spotted owl and Upper Willamette River steelhead trout. There are municipal water supplies within the vicinity of one of the blowdown patches and one lies within the BLM Class III and the other two are in Class IV Visual Resource Management categories.

### 1.2 Background

The Nestucca River is a sixth order stream originating in the north Coast Range, west of McMinnville, Oregon. The river flows west and slightly south, 53 miles, to Nestucca Bay at Pacific City. The Nestucca drains 255 square miles with an average slope of 37 feet per mile. The proposed project area includes sections of the upper river and its tributaries.

Bear Creek and Ginger Creek are fourth order tributaries of the Nestucca River located within the project area. Elevation within the Bear Creek watershed ranges between 760 and 2,400 feet above sea level. It drains approximately 5.6 square miles. Ginger Creek is a perennial stream flowing in a narrow alluvial canyon. It drains about one square mile. Elevations range from 1,510 to 2,885 feet. A small, shallow debris landslide occurred in 1996 mobilizing additional rock, soil and woody debris into Ginger Creek about 1,000 feet upstream of the road crossing. Large sediment bars composed primarily of sand and gravel have accumulated behind the inlet. The current sediment regime and routing process are not properly functioning. The culvert commonly plugs two or three times each year. Continued plugging could be expected especially in light of the new landslide.

A number of historical events have heavily impacted fish habitat in the Nestucca River basin (Baker et al., 1986). From the mid 1800's until 1919 the Nestucca drainage forests were repeatedly burned. Increased erosion and sediment production, as well as changes in runoff and stream temperature may have occurred after the fires.

Catastrophic floods, both natural and man-caused, also exerted a major influence on fish habitat. Major floods occurred in 1945, 1950, 1955, 1964-65, 1972 and 1996. In November, 1962 Meadow Lake Dam on the upper Nestucca River failed. The resulting floods negatively impacted the system by scouring the channel to bedrock below the reservoir and exporting or stranding LWD (large woody debris) out of the natural floodplain in the upper watershed eliminating that source of future floodplain recruitment of large wood. Adverse impacts of land clearing (homesteading), roads, timber harvest and woody debris removal (stream cleaning) have also combined to reduce the quality of fish habitat in the Nestucca River.

Chinook and coho salmon, steelhead trout, cutthroat trout and other non-salmonid fishes inhabit the proposed project area. Upslope areas are generally dominated by forests of Douglas-fir with varying understory and overstory components of red alder, big leaf maple, western hemlock and western red cedar. Riparian areas generally contain a larger alder component.

The Upper Nestucca River and its tributaries had projects implemented within this analysis area to restore fisheries habitat and to study effectiveness of those actions. Intensive instream structure placement occurred in the Upper Nestucca River from 1986 through 1989. Log and boulder structures were placed on 7.5 miles of stream to retain spawning gravels for adult salmonids and provide high flow refuge for juvenile coho salmon. Side channels were also excavated to provide winter refuge for juvenile coho. In 1995, additional large wood was placed in two locations on the mainstem Nestucca to add debris catching elements and to maintain existing structures and in 1998 juvenile passage elements were placed in several tributary streams. Other streams in the Upper Nestucca including portions of Bear and Elk Creeks have had enhancement structures added as well during the 1980's and early 1990's.

BLM Fisheries Biologists recommended development of additional enhancement projects which would help meet several RMP (Salem District Record of Decision and Resource Management

Plan) management objectives. The actions described in section 2.2.2 address areas that are still in need of restoration activities as identified by watershed analysis or analysis of new data, and existing enhancement structures in need of maintenance and/or improvement. New data collected by the Oregon Department of Fish and Wildlife in 1997 on the Nestucca River and several tributaries augments data analysis and helps give insight as to where the greatest amount of benefit can be expected from enhancement projects. An **IDT (interdisciplinary team)** was formed with the intent of further developing the proposed management recommendation and to complete an **environmental analysis** of the recommended actions.

Pursuant to **NEPA (National Environmental Policy Act)**, that **environmental analysis** is documented in this **EA (environmental assessment)**.

This **EA** is intended to provide the Tillamook Resource Area Manager sufficient information for reaching an informed decision and determining whether an action may have significant environmental effects. Should the selected action(s) have significant environmental effects, an **environmental impact statement** will be prepared. If the selected action(s) do not have significant environmental effects, **a finding of no significant impact** will be prepared.

In the refinement of the proposed actions the IDT followed several documents which provide guidance and restrictions for managing forest ecosystems on a regional basis. The list of those documents includes the following: Salem RMP, dated May 1995; Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl; dated April 1994; Late Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area, dated August 1998; and The Nestucca Watershed Analysis, dated October 1994. Authority for this proposal is provided by the O&C Act of 1937 and the Federal Land Policy and Management Act of 1976. These documents are available for review at the BLM - Tillamook Resource Area Office, 4610 Third Street in Tillamook, Oregon.

### **1.3 Purpose of and Need for Action**

The Nestucca Watershed Analysis (BLM/USFS 1994) identifies the need to implement projects that introduce large woody debris to the stream channels as part of a natural process (e.g. riparian planting ), or as the addition of logs from the uplands or riparian areas as an interim measure to maintain the primary pool forming component as well as the complex interactions that large wood has with the floodplain. The designation of the Nestucca River as a salmonid **core area**, a Federal Tier One Key watershed for salmonid production and designated critical habitat for Oregon Coast coho salmon are important reasons to apply management actions that increase habitat complexity and should allow better fish utilization and an increase in the numbers of **out migrant smolts**.

To promote the achievement of **ACS (Aquatic Conservation Strategy)** objectives as defined in the Northwest Forest Plan is a major objective of the projects. The long term result of



implementing the Forest Plan and achieving ACS objectives in the Upper Nestucca River will be restoration of natural sediment and hydrology and thereby fisheries populations. Current habitat conditions have been negatively affected by past natural events and management actions, and can be improved by actions at this time.

The Nestucca/Neskowin Watershed Council published a Watershed Assessment in May 1998, which ranked stream segments by restoration priority. The Upper Nestucca above Alder Creek is ranked “high +” as is Bear Creek (main Nestucca tributary), which is the highest ranking on the list and is defined as “Streams with characteristics that provide the best potential to provide high quality, productive habitat and successful restoration projects” (Nestucca/Neskowin Watershed Council 1998).

The Upper Nestucca River has populations of coho, steelhead, spring/fall chinook and cutthroat trout. While fall chinook numbers are currently considered to be stable or increasing the other species are considered to be depressed in numbers. Oregon Coast coho salmon are listed under the ESA as threatened, while cutthroat and steelhead are ESA candidate species. Cutthroat, coho and steelhead depend on complex habitat types during their freshwater rearing period.

Within the mainstem of the Nestucca River, habitat conditions have changed both as a result of management actions and natural disturbance events. The upper river changed character greatly when the Meadow Lake dam failed in 1962. This event as well as other floods in the 1970's scoured the stream channel to bedrock in many locations. Large wood pieces that had formed debris jams and other complex habitat features were left perched on the new flood terrace which was isolated from the active floodplain in many locations as a result of the Meadow Lake flood event. Stream cleaning and road construction within the narrow valley floor of the upper Nestucca watershed constricted the stream channel in many locations and induced downcutting as well. Past fire history in the Nestucca watershed, homesteading and timber harvest resulted in removal of much of the older forest types and the potential for recruitment of large wood into the stream channels in the upper river. The mature conifer stands are mostly aged 80-120 years and are generally healthy, however these relatively young stands contribute little large wood to the stream channels and are not expected to add substantial amounts for decades to come.

Desired aquatic habitat conditions have been determined for western Oregon streams based on data from undisturbed systems. From these desired conditions, aquatic habitat standards have been developed by state and federal agencies and research organizations. Table 1 below displays deficiencies in aquatic habitat conditions, based on the standards, by reach for the upper Nestucca watershed. It is expected that a century or more may be required for impacted streams to attain the desired condition, that is to recover, on their own. The habitat requirements of aquatic species, particularly depressed fish populations, need to be addressed in a shorter time frame to help ensure survival of these populations. Enhancement projects, such as those described in this document, are interim measures to improve aquatic habitat and help sustain depressed fish populations until natural recovery of the aquatic system can occur. The projects listed in section 2.2.2 have one common goal which is to improve the habitat for salmonids

rearing to smolt stage in the Nestucca River system. While the individual actions taken to achieve this goal vary considerably, an increase in complex habitat or access to that habitat is expected. This has been shown by past studies and experience to be effective in increasing juvenile salmonid overwintering survival and overall rearing potential. Increasing habitat complexity is measurable if individual indicators, compared through time, include large wood, pool frequency and depth, amount of cover, the width to depth ratio, substrate composition and flood plain connectedness are assessed.

**This portion of Page Blank Intentionally for Spacing.**

**Table 1. Selected Habitat Indicators.** This table displays the current conditions (deficiencies only) and desired condition of selected fish habitat indicators for the Nestucca River from Alder Glen Campground to the base of McGuire Dam and the two mile portion of middle Bear Creek which are proposed project locations. The comparison of existing conditions and desired conditions resulted in the identification of resource opportunities. Environmental objectives /goals were developed to address those opportunities and are also displayed in the table. Additionally, the table contains a list of management actions to be analyzed in the Environmental Assessment which were designed to achieve the environmental objectives.

<b>Reach</b>	<b>Current Conditions Deficiencies Only</b>	<b>Desired Conditions Standards BLM/NMFS</b>	<b>Objectives / Goals</b>	<b>Management Actions</b>
Nestucca Alder Glen to McGuire Dam	<u>Temperature</u> >68°F	<58°F Spawning <64°F Rearing	Reduce stream temperatures.	See Chap 2.2.2 Project # 2-7 and Paragraph A following table
Nestucca Alder Glen to McGuire Dam	<u>Substrate/Sediment</u> 42%gravels 17%of riffle habitat types dominated by sand and organic substrate *1	>50% gravel dominated <5% riffles dominated (>50%) by fine's (sand and organic) substrates.	Increase gravel component. Decrease organic and sand component.	See Chap 2.2.2 Project # 2-7 and Paragraph B following table
Nestucca Alder Glen to McGuire Dam	<u>LWD</u> ~5 LWD Pieces per Mile	LWD = 80 pieces per mile >24inch diameter and 50 feet in length or 1.5X Channel width.	Add LWD	See Chap 2.2.2 Project # 2-7 and Paragraph C following table
Nestucca Alder Glen to McGuire Dam	<u>% Pool area</u> 49% area in pools	>50 % area in Pools.	Increase pool area.	See Chap 2.2.2 Project # 2-7. Increase the number and quality of pools
Nestucca Alder Glen to McGuire Dam	<u>Offchannel Habitat</u> < 1% currently low energy areas	>10% area in offchannel or low energy areas.	Create off channel / low energy areas.	See Chap 2.2.2 Project # 2-7 and Paragraph D following table
Nestucca Alder Glen to McGuire Dam	<u>Flood-Plain Connectivity</u> Limited flood plain connections with road impingement of channel in many locations	Good connectivity = secondary channels, LWD & sediment storage, high water table and riparian zone well vegetated	Increase LWD to increase flood- plain connections Increase # trees /vegetation in floodplain Mitigate / Remove road impingements	See Chap 2.2.2 Project # 2-7 and Paragraph D following table

<b>Reach</b>	<b>Current Conditions Deficiencies Only</b>	<b>Desired Conditions Standards BLM/NMFS</b>	<b>Objectives / Goals</b>	<b>Management Actions</b>
Nestucca Alder Glen to McGuire Dam	<u>Habitat Access</u> Passage Barriers present	Provide fish passage at all flows to all fish on manmade structures.	Provide fish passage at all flows to all fish on manmade structures.	See Chap 2.2.2 Project # 1. Improve fish passage at all flows to all fish on manmade structures.
Middle Bear Creek	<u>Temperature</u> >68°F for 7day moving average.	<58°F Spawning <64°F Rearing	Reduce stream temperatures	See Chap 2.2.2 Project # 2-7 and Paragraph A following table
Middle Bear Creek	<u>Substrate/Sediment</u> 37%gravels	>50% gravel dominated	Increase gravel component.	See Chap 2.2.2 Project # 2-7 and B following table
Middle Bear Creek	<u>LWD</u> ~2.8 LWD pieces per Mile	LWD = 80 pieces per mile >24inch diameter and 50 feet in length or 1.5X Channel width.	Increase amount of LWD	See Chap 2.2.2 Project # 2-7 and C following table
Middle Bear Creek	<u>% Area in pools</u> 46% of the stream area is recorded to be pool habitat types	>50 % area in Pools	Increase pool area	See Chap 2.2.2 Project # 2-7. Increase the number and quality of pools
Middle Bear Creek	<u>Pool Quality</u> 17% of Pools are ≥ 1.0 meter in depth	>20 % pools >1.0 meter deep	Maintain or increase % of pools >1.0 meter in depth	See Chap 2.2.2 Project # 2-7 and D following table
Middle Bear Creek	<u>Off Channel Habitat</u> 2.5% is currently low energy areas	>10% area in offchannel or low energy areas.	Increase off channel / low energy areas	See Chap 2.2.2 Project # 2-7 and D following tables

Middle Bear Creek	<u>Flood-Plain Connectivity</u> Limited flood plain connections.	Good Connectivity = secondary channels, LWD, sediment storage, high water table and riparian zone well vegetated	Increase LWD to increase flood-plain connections Increase # trees /vegetation in Floodplain	See Chap 2.2.2 Project # 2-7 and D following table
-------------------	---	--	--	--

A. Temperatures can be maintained or reduced through management actions such as increasing shade on the stream channel, and to a smaller degree, increasing the amount of floodplain connections and maintaining deep pools. See paragraphs C and D for further information.

B. Substrate in river channels varies considerably based on the parent material in the watershed, the stream gradient and influences such as past management actions. Large wood plays a key role in the sorting of materials in Coast Range streams. Quality spawning gravel is important for the recovery and maintenance of healthy fish populations. Structural elements such as large wood play a role in maintaining and recruiting high quality gravels. “Obstructions also tend to control the sorting and distribution of different sizes of gravel on the stream bed. Bends and large obstructions often divert flow across the channel instead of directly downstream. Where this occurs, the more easily entrained fine particles tend to move along the bottom in the direction of flow that angles across the stream, while coarse particles react more to the force of gravity and tend to move in the direction of the slope of the bed” (Dietrich and Smith 1984). “Consequently, relatively clean spawning gravels can be maintained in a stream containing abundant fines because of the sorting that occurs at large obstructions and bends” (Sullivan et al. 1987). Thus, in systems like the Nestucca where surveys (1997 ODFW Aquatic Inventory) show 17% fines (sand and organic matter) in gravel which is higher than desired, structural elements in the form of large wood are important yet lacking component in maintaining quality, productive spawning gravel.

C. Current research indicates that in coastal streams large wood pieces and accumulations of wood play a vital role in maintaining channel complexity and fish populations. The addition of large woody debris creates scour, recruits and maintains spawning gravel, creates rearing pools and increases the complexity of the system for several fish species and various age classes within those species. “Large woody debris plays a vital role in maintaining the distribution and frequency of many diverse flow and cover conditions in small forested streams and in serving to ameliorate the erosive forces of channel forming and flood flows. It is the condition created by the LWD, e.g. variable velocity regimes, darkness, and overhead shelter, that fish seek out, and not the structure itself” (Shirvell 1990). Juvenile coho salmon and older age classes of steelhead and cutthroat trout strongly prefer the low velocity habitats that debris-formed pools provide (Bisson et al. 1982). “For these salmonids a loss of pools means almost a proportional decrease in their abundance. Seasonally, velocity shadows cast by woody debris may be even more significant in maintaining salmonid abundance” (McMahon and Hartman 1989).

D. Off channel or refuge habitat is of primary importance during the high water or bankfull periods. Juvenile coho and other salmonids key in on areas that provide refuge from the high velocities that dominate the stream channel during high water flows. Past management actions in the Nestucca River have included the addition of side channels, alcoves and debris jams. These along with the natural refuge areas such as flood plain connections provide the current winter refuge habitat within the Upper Nestucca. Portions of the currently proposed projects will focus on the creation of flood plain connections and the addition of log jams that will provide both refuge from high velocity water and the gravel sorting functions discussed in B. Riparian planting will provide short and long term benefits. Shade and bank stabilization often occurs within ten years and in the long term LWD additions can be expected from the planted trees.

#### **1.4 Proposed Action**

The proposed action was designed specifically to achieve the environmental objectives/goals identified for the planning area (see Table 1 above). The overall goal of the enhancement projects is to improve salmonid spawning and rearing habitat at individual sites and along several reaches within the Nestucca River. The total length of the reaches identified to be enhanced is approximately 17 miles, of the 17 miles approximately 50 percent would have work accomplished if implemented. The balance of the area is, either unsuitable for wood placement due to high gradient, has limited access or is already in a more desirable condition.

Projects, as described in section 2.2.2, would be implemented as funding becomes available and are anticipated to take place over the course of one to five years. The specific activities would entail the replacement and/or modification of a culvert, maintenance of 20 to 60 existing stream structures, the placement of up to 240 new stream structures with heavy machinery, helicopters, horses or by hand tools (involving hauling logs and rock from remote locations), the direct input, through felling or pulling of trees to the stream and planting riparian areas as needed.

#### **1.5 Decision to be Made**

Dana Shuford, Tillamook Resource Field Manager, is the responsible official for deciding whether or not an ***Environmental Impact Statement*** is needed and whether to approve the project as proposed, not at all, or to some other extent.

#### **1.6 Issues and Units of Measure**

In compliance with NEPA, the proposed action was listed in the June, September and December 1998, March and June 1999 and February 2000 editions of the Salem District Project Update newsletter which was mailed to over 1000 addresses; a letter mailed on May 12, 1999 to potentially affected and/or interested individuals, groups, and agencies (Project Record, Document 4); and two tours were conducted of the proposed project areas for the interested public (Project Record, Document 10) and by the request of the combined level 1 team along with other interested agency

members (Project Record, Document 11). A total of four letters and oral responses were received as a result of this scoping. All public input was assigned a number and filed in the Project Record. The IDT reviewed, clarified, and assessed the public comments. The disposition of those comments was approved by the responsible official on June 14, 1999. Fish and fish habitat was the only major issue identified and will be the focus of this environmental analysis. Chapter 3 will also contain a discussion of the four other elements of the environment (vegetation, soil, water and wildlife ) which were not identified as major issues but are subject to environmental analysis. Additionally, the **major issue** and the other elements of the environment are associated with a specific **unit of measure**. The **units of measure** were selected to evaluate issue resolution, evaluate attainment of project objectives, and/or describe environmental impacts.

#### 1.6.1 Fish and Fish Habitat (major issue)

Issue Statement: The proposed use of equipment in the stream channel will increase the turbidity in the short term (several hours) which may have a detrimental effect on fish species and habitat. Potential impacts range from avoidance to mortality of individuals. In addition, with equipment in the stream channel there is the potential for fuel or oil to enter the stream which may negatively affect water quality, fish habitat or fish.

The unit of measure selected for each fish species listed or proposed under ESA or critical habitat designated for ESA listed species is a narrative that describes whether there would be: 1/ no effect; 2/ may affect, not likely to adversely affect; or 3/ may affect, likely to adversely affect. The unit of measure selected for the fish species included in the Special Status Species policy is a narrative that describes whether an action would result in a trend toward federal listing or loss of population viability. The unit of measure for other fish species is a narrative. An additional unit of measure is affects to ACS objectives and National Marine Fisheries Service Matrix of Indicators (Appendix 4 and 5)

1.6.2 Vegetation resources have been divided into three categories to facilitate analysis. These categories include forest vegetation, special status species and noxious weeds. The units of measure selected are a narrative of the areas treated. For the special status species the unit of measure includes federal listing, loss of population viability or contribute to the need to elevate the level of concern.

1.6.3 Soil. The units of measure selected for soil resources are the acres of soil disturbance and the amount of compaction or displacement.

1.6.4 Water. The units of measure selected for water resources include water quality and the amount of bedload expected to move out of Ginger Creek.

1.6.5 Wildlife. The unit of measure selected for each wildlife species listed or proposed under ESA is a narrative that describes whether there would be: 1/ No Effect; 2/ May Affect, Not Likely to Adversely Affect; or 3/ May Affect, Likely to Adversely Affect. The unit of measure for critical

habitat for those ESA species a narrative that describes whether there would be: 1/ No Effect, or 2/ May Affect. The unit of measure selected for the wildlife species included in the Special Status Species policy is a narrative that describes whether an action would result in a trend toward federal listing or loss of population viability or contribute to need to elevate the level of concern. The unit of measure for other wildlife species is a narrative.

## **CHAPTER 2.0 ALTERNATIVES**

### **2.1 Alternative Development**

In addition to the required “no action” alternative, the IDT formulated one preliminary alternative which addressed the major issue (fish and fish habitat) identified by the public and IDT during scoping (Project Record, Documents 6-9). The IDT assessed that preliminary alternative and it was approved by the responsible official on July 14, 1999. The finalized list of alternatives includes a “no action” alternative, the Proposed Action and one other action alternative that addresses the major issue and fulfills the purpose and need for action.

### **2.2 Alternative Description**

#### **2.2.1 Alternative 1 (No Action)**

The BLM would not implement the fish habitat restoration and enhancement project in the Nestucca Watershed at this time. The aquatic community would be dependant on ecological processes that would continue to occur based on existing conditions.

#### **2.2.2 Alternative 2 (Proposed Action)**

In general the original restoration projects on the mainstem Nestucca River consisted of many weir type structures comprised of both rock and large wood. Some of these existing structures, which were placed to help aggrade the channel, are not functioning or would be more effective if additional pieces were added. These original restoration project structures may receive maintenance and/or addition of large wood pieces or rock to function as debris catching elements, adjacent complex habitat, or juvenile passage structures if needed.

Low gradient sections of the Nestucca and/or areas with limited floodplain connections would be of high priority for enhancement. Low gradient reaches have the highest potential to retain large wood and provide the best salmonid rearing habitat. Large wood can aggrade the channel and increase floodplain connections, which increases high flow refuge habitat, benefitting juvenile salmonids.

Trees from offsite locations are limited to the length that can be trucked while weight will be the primary consideration if trees are flown in by helicopter. For each mile of habitat to be enhanced, approximately 10 to 20 large logs/trees at least 28 inches in diameter at the large end would be



added, along with at least 20 smaller diameter trees/logs (12 inches in diameter minimum), which includes trees added from the **RR**. The **NMFS** standard for large wood is 80 pieces per mile, which are 24 inches in diameter and at least 50 feet or 1.5 times the channel width in length. The wood standard is not expected to be achieved through the currently proposed projects. However, what is placed in the channel will enhance fish habitat and create locations for wood moving in the system to collect. Out of the 17 miles in the planning area approximately 50% or 7-9.5 miles of habitat is anticipated to have work accomplished. Approximately 360 trees are needed based on 40 trees per mile being added.

The limitations in moving trees/logs of large size and the limited number of very large trees onsite that are available for use instream use may require the use of anchoring in some locations (i.e., the Alder Glenn section). To increase the length of time trees will remain in place some may be attached together by means of rebar, cable or rope. While this technique is not necessary in all areas specific areas with bedrock substrate would benefit by this type of action. The trees/pieces would be attached to each other increasing their mass but would not be attached to the substrate allowing them to move during major storm events.

Specific actions and planning areas under this alternative include the seven projects elaborated below. Appendix 1 shows proposed project locations. For all restoration reaches trees that meet the selection criteria may be selected from up to 300 feet from the stream channel, fallen or pulled over and then placed into the channel.

### **Project Descriptions**

Project #1. Planning, design and implementation of a successful fish passage structure at the Ginger Creek culvert. Ginger Creek is known to be used for spawning and rearing by coho, steelhead, cutthroat and fall chinook. The current culvert at this location is a likely barrier to juvenile salmonids at all flows and to adults at specific flows due to the size, length and gradient of the culvert at this location. This is a long round culvert with approximately 3% slope with 1.5 meter diameter. This culvert located on the Nestucca Access Road at Ginger Creek became plugged during the 1996 flood event and was a barrier to all fish at that time. Design criteria include fish passage and ability to accommodate a 100-year flood event with associated debris.

The culvert at Ginger Creek would be removed and replaced with a culvert or other structure designed to accommodate 100-year floods and to allow fish passage. While the design criteria for Ginger Creek culvert replacement has not been completed, the following design features and BMPs (Best Management Practices) would be implemented:

1. Conduct in-stream work between July 1 and September 15, the time period with the least impact to fish. These dates meet ODFW "Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources, January 1997".

2. Conduct out-of-stream work during periods of low soil moisture, usually between June 15 and October 31.
3. Temporarily divert stream water around work areas to minimize sedimentation during construction.
4. Remove fill material around existing culvert; stock pile material needed for back filling excavations; place unsuitable and excess material in a pre-approved waste area located above the 100-year floodplain; and minimize compaction of waste material.
5. Install 100-year flood design culvert. It is assumed that the existing culvert would be replaced by an open-bottom arch pipe approximately the same width as the bankfull width or by a bridge.
6. Place fill material over new culvert; use material from pre-approved borrow sites.
7. Use sediment traps and other devices as needed during construction activity to reduce sediment delivery into the stream.
8. All exposed soils would be stabilized and seeded or planted with native species upon completion of construction activities.

Project #2 includes the previous mainstem Nestucca River fish habitat enhancement projects located, from 1/4 mile below Bald Mountain Fork Nestucca to Ginger Creek, need maintenance of existing structures as well as the addition of new wood pieces to increase habitat complexity. This 3.9 mile section currently has 3.8 LWD (Large Woody Debris) pieces per mile. As onsite trees are of insufficient quantity, pieces from offsite would be trucked or flown in by helicopter.

Project #3. In this ~2.0 mile reach of Bear Creek there are currently few LWD pieces. Additional trees may be added by felling conifers adjacent to the stream. The use of existing riparian trees is likely to fulfill only a small portion of the needed LWD. In areas where riparian trees are not available as a source of wood or where additional wood is desirable, a helicopter would be utilized for transportation to and placement of wood in the stream channel.

Project #4. The mainstem of the Nestucca River from T. 3. S. R. 7. W. Section 26 from the Oregon Department of Forestry property line approximately 3500 feet or 0.7 miles upstream is located in a deep, narrow canyon with limited access for equipment. This stream section has good amounts of gravel, low amounts of fines in riffles and good pool depth, however the amount of large wood in this reach is low. For this reach it is proposed that trees be felled or pulled into the active channel to augment the large wood component. This reach contains approximately 663 conifers per 1000 feet of stream channel within 30 meters of either side based on ODFW riparian habitat inventory. Upstream from the canyon to the confluence of Fan Creek (an additional 2.6 miles) road access is available allowing the opportunity to bring in wood and rock from other locations by truck. If a helicopter is used for the delivery of wood or rock from offsite locations, access would include the majority of the reach but may require the felling of selected alder to improve pilot visibility.

Project #5. The Nestucca River at the Alder Glen Recreation site would benefit from instream work for several reasons. It is a low gradient reach with several large holding pools used by chinook, coho and steelhead for extended portions of the year. However, there is a heavy bedload of sediment originating upstream out of Bear Creek, a lack of large wood, and the stream banks along the campground are actively eroding, increasing sedimentation and creating a safety concern in the campground. The addition of large wood and rock elements in this reach would increase habitat complexity and provide some protection to stream banks in the campground. This area is approximately ½ mile in length with close proximity to the Nestucca Access Road which would allow equipment access. Materials could be delivered by truck or helicopter at this location.

Project #6. Within the area covered by this project proposal other stream segments may be added that have had restoration work in the past. Projects in these areas would include repair or replacement of approximately 50 damaged structures with logs or rock hauled in from the sources noted below by either truck or helicopter.

Project #7. Ongoing riparian planting is proposed to occur adjacent to the instream restoration sites or at other locations along the streams within all previously discussed project areas. Riparian planting would be used to revegetate areas disturbed due to instream habitat work, to increase shading of stream channels, to increase plant diversity, or to reestablish native vegetation where introduced species occur. Native trees, shrubs, grasses and/or forbs would be used for revegetation. Where there is a deficiency in plant diversity or shade to the stream channel specific silvicultural prescriptions would be developed. Riparian planting would adhere to guidelines in the RMP and Nestucca Watershed Analysis.

## **Mitigation Measures**

### **Soil and Water**

All disturbed sites that could potentially lead to sediment input would be rehabilitated. The following measures would help minimize adverse effects to water quality:

1. Limiting construction in stream channels to the dry season.
2. Confining heavy equipment to designated access trails, and log and boulder drop locations prior to implementation.
3. Limiting construction activities in sensitive areas to areas that are necessary.
4. Fell only a few trees in any one area.
5. Construct water bars or dips on potential flow paths.
6. Upon completion of construction activities, all exposed soils would be stabilized and seeded or planted with native species.
7. Clean equipment of grease oil and dirt before movement into project area and check regularly for leaks while in operation.

8. Install oil collection booms downstream of project areas and have an approved spill clean up kit on site.
9. Fuel any machinery outside of the riparian zone on hardened surfaces (roads pullouts).

### Wildlife

To the extent feasible, activities that may disturb listed species would be conducted after the critical breeding season (June 30 for owls and August 5 for murrelets). If a helicopter is used, a large ship would be required. Helicopter work would be planned to begin after August 5, and may continue a short time past September 15 if more time is needed a waiver to extend the instream work season may be obtained from ODFW if conditions are appropriate. All activities that generate noise above the ambient level from April 1 to September 15 would commence no earlier than two hours after sunrise and would cease two hours before sunset. Undisturbed conditions, including associated low level aircraft operations, would be maintained within the Elk Creek ACEC between January 1 and August 15. This time period may be waived after June 1 if bald eagle nesting has failed or no nesting activity occurs.

### Wood source locations and anticipated need by restoration area

In addition to the trees in stands adjacent to project areas identified in Table 2, other sources may include but are not limited to :

1. Management actions on BLM land within the North Coast Range AMA such as road projects, timber sales and hazard trees along roads and in campgrounds (e.g. T3S R6W Section 13).
2. Blowdown events that have or may occur on BLM lands within the North Coast Range AMA (e.g. T3S. R6W. Section 28 and T4S R7W Section 25, 26). These patches have the added benefit of attached root wads which are desirable from the point of stability in stream channels.
3. Purchase from local mills or loggers.

Table 2 below displays the number of trees needed to implement the proposed project and the approximate length of restoration area within each project area. A map of the area and project locations is included as Appendix 1. As discussed in section 2.2.2 above only a portion of the reach length would have work accomplished. Other factors such as the current amount of large wood and an estimated 40 trees per mile added where work would be accomplished is described below.

**Table 2. Trees Needed by Work Area and Their Potential Source.** This table displays the number of trees needed by project area and their potential source.

<b>Proposed Project</b>	<b>Length of Work Area</b>	<b>Desired Number of On-site Trees</b>	<b>Total # of Trees Needed for Project Area</b>
Bald Mtn. / Ginger Creek Project #2	2.0 miles	28-46	75-100
Middle Bear Creek Project #3	1.0 miles	14-23	30-41

Cabinet to Fan Creek Project #4	2.0 miles	23–38	64-85
Alder Glen / Bear Cr Project #5	0.5 miles	0	15-20
Other areas Project #6	up to 4.0 miles	49-80	94-125
Totals	7-9.5 miles	114-187	278-371 ~360

#### **Criteria for Selection of Riparian Trees**

1. Trees to be felled or pulled over from the riparian stands would be selected by a resource area wildlife biologist, who would view each tree from the best available on-the-ground vantage points.
2. The selected trees would be those without visible evidence of structures that could be used for nesting by marbled murrelets and would not contain any arboreal rodent nests.
3. The selected trees would generally be located 100 feet or more from trees with visible evidence of potential marbled murrelet nesting structures or arboreal rodent nests.
4. The selected trees would be taken from various patches of forest that are uniformly stocked and lacking in trees with large limb development. These patches are located along the 7 - 9.5 miles of the river corridor in which the restoration work would occur.
5. The selected trees would be well distributed in the patches from which they are taken. Generally, a tree would not be selected directly adjacent to another selected tree. The goal would be to have, in most cases, from 50 to 200 feet between one selected tree and the next. However, in some individual locations, small clumps of 2 - 3 trees may be selected together.
6. The trees would be selected such that in felling and/or pulling them, they would not fall into or through the crowns of trees that appear to have potential murrelet nesting structure or arboreal rodent nests.
7. The selected trees would be those with relatively small live crowns, in the intermediate or codominant crown classes, so that large openings would not result. Canopy closure of the riparian stands in the vicinity where trees are felled or pulled over would be reduced by 5% or less. Thus, the potential for these stands to provide suitable nesting structures for murrelets would be unaffected by the proposed action.

### **Monitoring**

In addition to the proposed projects discussed above, a monitoring plan would be implemented (Project Record Document #13). Monitoring, before, during and after project implementation, may include aquatic invertebrate sampling, fish population and assemblage monitoring, instream turbidity measurements, and habitat changes through time by photograph (photo points) and visual observations (spawning surveys). Long term detailed monitoring/surveys of the individual habitat indicators such as percentage of pool area, amount and size of LWD and depths and widths of the channel are expected to occur at about a ten year interval. A monitoring plan would also determine whether restoration activities were implemented consistent with the guidelines and **BMP's (Best Management Practices)** designed to avoid and minimize adverse environmental impacts. It would also answer how effective the BMP's and restoration activities were in meeting the restoration objectives.

#### **2.2.3 Alternative 3**

A third alternative was developed by the IDT to address the concern for water quality as it related to the major issue (section 1.6.1). This third alternative is the implementation of the proposed action excluding the replacement of the Ginger Creek culvert (project #1) and any portions of the proposed action that necessitate heavy equipment in the stream channel. Under this alternative, placing offsite wood or manipulating wood in the channel could only be accomplished using a helicopter, hand tools or in a few locations equipment from the road or banks. Almost no rock could be placed. This alternative would result in much less instream habitat enhanced and few of the existing structures maintained or enhanced.

**Table 3. Comparison of Alternatives.** This table displays a comparison of the alternatives for selected parameters.

<b>Action</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>
rock /structure anchor	None	5 to 24 sites	up to 3 sites
Helicopter use	None	7-9.5 Stream miles	7-9.5 Stream miles
Existing structures enhanced/maintained	None	20 to 60	fewer than 10
Trees needed	None	Approximately 360 large trees from onsite and offsite locations	Approximately 360 large trees from onsite and offsite locations* (See paragraph below)

Ginger Creek culvert	No action	Replacement	No action
Riparian Planting **	None	Up to 7 acres	Up to 7 acres

\* While the number of trees needed remains the same for both alternative 2 and 3 there are notable differences in how the wood can be placed, potential effectiveness and source. Because alternative 3 allows for no equipment in the stream channel there is fewer chances to use trees from onsite locations and its placement will not always coincide with the most desirable location to make beneficial effects to habitat, (i.e. long term residence in the stream reach or short term benefits to ACS objectives, wood may interact less often with the stream due to its placement). With the potential use of a helicopter for offsite wood delivery to the stream channel large wood may be placed in most identified locations, however selected hardwoods may need to be felled to provide visual reference for the helicopter pilot.

\*\* Riparian planting would include those areas disturbed by equipment or the delivery of materials to the stream or its banks. An ongoing planting and maintenance effort (OR-086-00-04CX) on an additional 13 acres in the analysis area is expected to continue.

#### **2.2.4 Permits, Clearances and Surveys Required:**

Should alternative 2 or 3 be selected for implementation the following permits would be obtained and surveys conducted prior to ground disturbing activities.

1. U.S. Army Corps of Engineers, State of Oregon, Division of State Lands, "Joint Application for Permit" for removal or fill in the waterways of Oregon. (This applies to construction sites in or near streams and includes "wetlands" or exceeds the removal/fill allowances in the general waiver).

2. Division of State Lands "Fish Habitat Enhancement General Waiver Reporting Form" submitted through ODFW; City/County Planning Dept.; and Local Soil & Water Conservation District.

3. A botany clearance would be accomplished prior to project implementation and any needed mitigation would be incorporated into the project design.

#### **A. Lichens and Bryophytes:**

Surveys for lichens and bryophytes would be required at all of the sites required for mollusks and in addition, all areas where tree felling would occur. If trees are felled and hauled in from a remote site surveys would be conducted in conjunction with the project that initiated the tree felling (e.g. right-of-way timber). Management Recommendations IM OR 97-027, IM OR 99-039 Change 1, IM OR 2000-042 and Survey Protocols IB OR98-051, IM OR 98-038, IM OR 2000-017, would be followed as they apply.

NOTE: There are no survey protocols yet developed for many bryophyte species. The pending results from the SEIS (Supplemental Environmental Impact Statement for Amendment to the Survey and Manage, Protection Buffer, and other Mitigating Measures Standards and Guidelines) that is to address how best to categorize some species on the S&M (Survey and Manage) list may alter some of the survey requirements above.

B. Fungi:

Fungi surveys would be required at all sites where the ground is disturbed by machinery, much as in the recommendations for mollusks. Fungi surveys would be required at all sites where the ground is disturbed by machinery, provided there is suitable habitat at that location.

Management Recommendations IM OR 98-003 and Survey Protocols IM OR 98-103, IM OR 2000-018 would be followed as they apply.

NOTE: There are no survey protocols yet developed for many fungi species. The pending results from the SEIS that is to address how best to categorize some species on the Survey and Manage list may alter some of the survey requirements above.

C. Vascular Plants:

Vascular plant surveys would be required in all the areas where the vegetative layer would be disturbed by equipment, much as would be required for fungi surveys. There is at least one Bureau Sensitive species (*Filipendula occidentalis*) that could occur in very close proximity to the wetted channel that could be affected by in-stream activities. Management Recommendations IM OR 99-027 and Survey Protocols IM OR 99-026 would be followed as they apply.

4. Concurrence, relative to the "Oregon Scenic Waterway Corridor", would be obtained from the Oregon State Department of Parks and Recreation.

5.

A. S & M Mollusks:

Terrestrial mollusk surveys would be required wherever equipment would disturb the ground outside of the riparian channel area. These areas would most likely be the ingress and egress points for the machinery and at culvert replacement sites. There are no Survey and Manage aquatic mollusks to be concerned with within the proposed project areas. Management Recommendations IM OR 2000-003, IM OR 2000-015 and Survey Protocols IM OR 98-097 would be followed as they apply.

B. Red Tree Vole:

That portion of the proposed project where trees would be felled or pulled over from the adjacent riparian stands would occur in suitable red tree vole habitat. The project would require the trees proposed for falling and those in the vicinity of those to be felled would be surveyed to protocol



to assure that no red tree vole nests are in the area. Trees to be felled would be selected in such a way as to not open the stand in any appreciable way. Survey Protocols IM OR 98-105, IM OR 2000-037 would be followed as they apply.

6. A Cultural & Paleontological Resources clearance would be accomplished to protocol in accordance with the Programmatic Agreement, dated August 1998 prior to project implementation and any needed mitigation would be incorporated into the project design.

Botany, Fish and Wildlife concerns including those species proposed or listed under the ESA, or identified as S&M or Bureau sensitive would be addressed prior to project implementation and any needed mitigation would be incorporated into the project. This includes consultation with USFWS (United States Fish and Wildlife Service) and NMFS (National Marine Fisheries Service) as required under the ESA.

## **CHAPTER 3.0**

### **AFFECTED ENVIRONMENT and ENVIRONMENTAL CONSEQUENCES**

#### **3.1 Introduction**

This Chapter shows the present condition (i.e., affected environment) within the project area and the changes that can be expected from implementing the action alternatives or taking no action at this time. The “no action” alternative sets the environmental base line for comparing effects of the action alternatives.

The major issue (see Chapter 1.6.1) defines the scope of environmental concern for this project. The environmental effects (changes from present base line condition) that are described in this chapter reflect the identified major issue as well as four other elements of the environment (vegetation, soil, water and wildlife). For those other resources or values which review is required by statute, regulation, or Executive Order, or policy, Appendix 2 contains the appropriate documentation as to the effects of the proposed action on those resources or values.

Appendix 3 contains a description of past, present, and reasonably foreseeable future actions that will be considered in the cumulative effects discussion.

For a full discussion of the physical, biological, and social resources of the Salem District, refer to the FEIS (Final Environmental Impact Statement), dated September, 1994, for the Salem District Resource Management Plan. The discussion in this document is site-specific and supplements the discussion in the Salem District FEIS.

#### **3.2 Fish and Fish Habitat (Major Issue)**

### 3.2.1 Affected Environment

The Nestucca River has been designated a Tier 1 Key Watershed in the Salem District RMP. Key watersheds serve as refuges for the purpose of maintaining and recovering habitat for at-risk stocks of anadromous salmonids and resident fish species.

Fish species found within the Nestucca River watershed are listed in Table 4. Most of these species are found within proposed project areas. Chum salmon are only found in the lower watershed. Other species also inhabit the Nestucca River system for all or part of each year. Aquatic habitat requirements for salmonid species, and current aquatic habitat conditions within the Nestucca watershed are described in section 1.3 and are summarized in Table 1. The non-salmonid fish species vary in their habitat needs, however they all benefit from cool water, complex habitat, pools and clean spawning gravels.

The south side of the AMA block, which falls within the Willamina Creek drainage, is not part of the actual project area, however wood for the projects may be obtained within this area. Fish species found within the Willamina Creek drainage are listed in Table 5. Upper Willamette steelhead are the only anadromous salmonid native to the Willamina Creek watershed. Cutthroat trout are native to the Coast Range sub-basin which includes Willamina Creek, however they are not anadromous above Willamette Falls. The actual distribution of cutthroat in this drainage is not known, but second order or larger streams are expected to have these trout present for at least a portion of the year. Coho salmon are not native above Willamette Falls. Coho were first introduced in the 1920's and stocking continued at various times until the 1980's. Some naturalized coho may still remain as a result of past stocking. The Oregon chub, federally listed as endangered under the ESA, is present in the Willamette River Basin. A known population can be found inside the Finley Wildlife Refuge (Wevers *et al* 1992), however this species preferred habitat is not found in upper Willamina Creek. Warmwater game fish are not native to the Coast Range sub-basin, but are now found within the Yamhill River drainage.

Table 4 Fish Species and Status within the Nestucca River Watershed		
Common Name	Scientific Name	Status
Oregon Coast coho salmon	<i>Oncorhynchus kisutch</i>	federal listed - threatened
Oregon Coast steelhead trout	<i>Oncorhynchus mykiss</i>	federal candidate
Oregon Coast cutthroat trout	<i>Oncorhynchus clarki</i>	federal candidate
Oregon Coast chinook salmon	<i>Oncorhynchus tshawytscha</i>	

Pacific Coast chum salmon	<i>Oncorhynchus keta</i>	Bureau sensitive
Pacific lamprey	<i>Lampetra tridentatus</i>	Bureau tracking
western brook lamprey	<i>Lampetra richardsoni</i>	
river lamprey*	<i>Lampetra ayresi</i>	Bureau tracking
sculpin	<i>Cottus</i> sp.	

\*presence not verified

Table 5 Cold Water Fish Species and Status within the Willamina Creek Watershed		
Common Name	Scientific Name	Status
Upper Willamette steelhead trout	<i>Oncorhynchus mykiss</i>	federally listed - threatened
cutthroat trout	<i>Oncorhynchus clarki</i>	
coho salmon	<i>Oncorhynchus kisutch</i>	Introduced
Pacific lamprey	<i>Lampetra tridentatus</i>	Bureau tracking
river lamprey*	<i>Lampetra ayresi</i>	Bureau tracking
western brook lamprey	<i>Lampetra richardsoni</i>	
redside shiner	<i>Richardsonius balteatus</i>	
reticulate sculpin	<i>Cottus perplexus</i>	
torrent sculpin	<i>Cottus rhotheus</i>	

\*presence not verified

Refer to Appendix 4, Matrix of Pathways and Indicators, for additional discussion of the environmental baseline conditions.

### 3.2.2 Environmental Consequences

#### 3.2.2.1 Alternative 1 (No Action)

Refer to Appendix 4, Matrix of Pathways and Indicators, for additional discussion of the environmental effects of this alternative, including any interrelated or interdependent actions, on relevant indicators. Refer to Appendix 5 for a discussion of the alternatives relative to the Aquatic Conservation Strategy Objectives.

No direct or indirect effects would occur to fish or fish habitat in either the Nestucca or the Willamina drainage. As this is a "no action" alternative, no ESA call would be made. Many riparian areas within the Nestucca watershed lack conifers for future input of large wood, thus as current large wood decomposes there will be little additional or even replacement, which will result in reduction in fish habitat. The existing Ginger Creek culvert would likely fail sometime in the future, resulting in road fill damage, blockage of the road segment, and delivery of a large quantity of sediment and debris, which may adversely impact fish species within the Ginger Creek and Nestucca River drainage.

### Cumulative Effects

Oregon Coast coho salmon, listed as threatened under the ESA, are currently experiencing a downward trend (Weitkamp et al., 1995). Oregon Coast coastal cutthroat trout and Oregon Coast steelhead are both ESA candidate species, indicating downward trends for these species as well. Downward trends in populations of coho are attributed to habitat degradation, water diversions, harvest and hatchery influence (Federal Register 1998), and the same is likely to be true of the other salmonids. Quality freshwater habitat for salmonids includes cold water, pools, and clean spawning gravel. The formation of quality habitat depends on an adequate supply of large wood within the stream channel, which creates pools, provides cover and retains spawning gravels. Habitat conditions have changed both as a result of management actions and natural disturbance events. Floods, stream cleaning and road construction within the narrow valley floor of the upper Nestucca watershed constricted the stream channel in many locations, removed large wood from the stream channel and induced downcutting. Fires, homesteading and timber harvest resulted in removal of much of the older timber and thus reduced the potential for recruitment of large wood into the stream channels. The mature conifer stands are mostly aged 80-120 years and are generally healthy, however these relatively young stands contribute little large wood to the stream channels and are not expected to add substantial amounts for decades to come.

Land ownership within the Nestucca watershed is approximately 65% federal, 15% private industrial timber, 5% Oregon Department of Forestry, and 15% other private land. Timber harvest and associated activities are expected to continue on state and private lands. Future management actions on federal lands will be in accordance with the Northwest Forest Plan which contains management direction to maintain or restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems, and to maintain or enhance fisheries potential. Since about 65% of the watershed is federal land managed by the BLM and Forest Service actions

taken on federal lands to restore riparian and aquatic habitat could have substantive beneficial impacts on fish species within the watershed. The BLM will likely pursue cooperative efforts with the Nestucca/Neskowin Watershed Council, private landowners and others to implement instream habitat improvements, which would lead to improvement in aquatic habitat conditions throughout the watershed. In addition, the Oregon Plan for Salmon and Watersheds should lead to some improvement in aquatic habitat, though to what extent is unknown as this is largely a volunteer effort. Without pursuing aquatic restoration projects on federal lands, natural recovery of the aquatic ecosystem is expected to occur, though at a much slower pace. A century or more may be required for impacted streams within the watershed to again become properly functioning and provide the quality habitat that at-risk salmonids need to recover. Salmonids currently undergoing a downward trend may not be able to maintain viable populations under the time frame associated with natural recovery of aquatic habitat.

Similar trends in fish populations are occurring in the Willamina Creek watershed. The BLM 1998 Deer Creek, Panther Creek, Willamina Creek and South Yamhill Watershed Analysis identified water temperature, landslides, streambank erosion, low flows, and stream channels containing little or no complexity as likely water quality problems within the Willamina Creek watershed. Past and present actions, primarily timber harvest, road construction, and residential development, have generally resulted in few legacies being retained from the previous stands and degraded riparian habitat, and have influenced the hydrologic processes of the watershed to the point that portions of the stream channels are at risk or not functioning properly. Stream buffers on private lands are typically on third-order and larger streams, and are quite narrow (usually the width of one normal tree spacing). Many of the buffers on private lands have been windthrown. The trend on private land, 63% of the watershed, is to harvest stands while they are still well within the closed sapling stage, maintaining primarily Douglas-fir plantations. About 91% of the private lands are in the closed sapling, open sapling, early grass-forb and non-forest condition. The amount of large woody debris of sufficient size and location that can enter streams is much less than necessary to sustain current conditions. As older pieces of wood currently in the system decompose or are transported out and the size and volume of available new pieces decreases due to the land being used for homes, fields, and timber production, the current condition would continue to degrade.

Numbers of Upper Willamette steelhead spawners have had a steep and continuing decline since 1988. The decline has been attributed mainly to destruction and modification of habitat, overutilization for recreational purposes, and natural and human-made factors (Federal Register: March 10, 1998, Vol. 63, No. 46, Proposed Rules, pp. 11797-11809). Though cutthroat trout are described as relatively abundant, it is likely that they are experiencing a downward trend for the same reasons as steelhead. Trends for other fish species within the watershed are mostly unknown, but are suspected to be downward given the habitat limitations described above.

### **3.2.2.2 Alternative 2 (Proposed Action)**

#### Nestucca Watershed

Refer to Appendix 4, Matrix of Pathways and Indicators, for additional discussion of the environmental effects of this alternative, including any interrelated or interdependent actions, on relevant indicators. Refer to Appendix 5 for a discussion of the alternatives relative to the Aquatic Conservation Strategy Objectives.

The projects in Alternative 2 were proposed and designed to implement the Aquatic Conservation Strategy. As a Tier 1 Key Watershed, the Nestucca watershed is ranked as a high priority for watershed restoration. The projects in the proposed action are expected to enhance and restore fish habitat, riparian habitat, and water quality. Placement of large wood pieces and boulders will create pool and backwater habitats, help sort and retain bedload material within the system, including gravel and cobble suitable for salmonid spawning, and help maintain and restore floodplain connections. Fish, particularly salmonids, will benefit through an increase in quality and quantity of spawning and rearing habitat. Riparian planting will increase shading of the stream channel, increase riparian habitat diversity, and provide a future source of large woody debris and nutrients to the stream channel. Benefits to fish include sustaining quality habitat through maintaining/reducing water temperature and natural addition of large wood to the stream channel. Riparian diversity could help increase food supply for many fish species. Replacement of the Ginger Creek culvert would result in the immediate direct benefit of providing passage for all fish at all stream flows. In addition, it would minimize disruption of natural hydrologic flow pathways, disperse stored material (mostly favorably sized sand and gravel for fish) downstream, and reduce risk of culvert failure, which could adversely impact fish.

The projects in Alternative 2 would result in some sediment delivery and turbidity within the Nestucca River and Bear Creek, which could lead to direct and indirect adverse impacts to fish and fish habitat in the short term. Sediment and turbidity would result from the removal and replacement of fill material at the Ginger Creek culvert site, equipment access routes to and into the channel, operation of equipment instream, and placement of logs and boulders instream. Increases in turbidity would be short-term, mainly during the actual instream work and possibly following the first major rainstorm after a project has been completed. Potential impacts to aquatic habitat include turbidity and sediment above existing conditions and short term decreased pool quality due to excess sediment input. The main direct adverse impact to fish would be the potential for short-term disruption of normal behavioral patterns (i.e. feeding and sheltering) as a result of increased turbidity. Adverse impacts to fish and fish habitat would be minimized by accomplishing instream work during summer low flow periods following the ODFW recommended instream work window, minimizing the number of equipment access points, routing streamflow around the site during culvert replacement, and seeding and/or planting any areas disturbed as a result of the project work.

Direct injury or mortality could occur during placement of trees and rock, and while equipment is operating instream. The probability of this occurring is low as fish will generally be able to move out of the way.

There is a potential for fuel or hydraulic fluids getting into the water, particularly while equipment is operating instream. Impacts to fish may be direct, causing injury or mortality through direct contact, or indirect by killing aquatic invertebrates that are the food supply for many fish species. Possibility of spills would be minimized or eliminated by daily checks of machinery for leaks. Impacts resulting from spills or leaks would be minimized by containment booms placed downstream of equipment during any instream work. Containment booms and other cleanup materials onsite would be a requirement for all contractors during instream or near stream work.

Overall, adverse impacts to fish, if they occurred, would be short-term. Adverse impacts may involve loss of reproductive success, loss of individuals from the population, and short term loss of habitat elements. Beneficial impacts would be both immediate and long-term. An ODFW Research Branch study, before and after a similar project on Lobster Creek in 1991 found no significant decreases of young or juvenile fish except for an apparent temporary reduction in the under 75 millimeter "trout" category. Even this change was more than compensated for by the improved habitat. Trap results the following spring documented substantial increases in salmon, steelhead and trout compared to pre-project surveys as well as trap results on a "control" stream. Due to the chance for short-term impacts that may result in *take* of Oregon Coast coho salmon, the ESA call would be "May Affect, Likely to Adversely Affect". Due to the short term impacts to water quality, the call for Oregon Coast coho designated critical habitat would be "May Affect, Likely to Adversely Affect", however the overall impact to critical habitat would be beneficial. Potential adverse impacts would not result in a trend toward federal listing, nor would they lead to any loss in population viability of any fish species. Beneficial impacts would be expected to result in increased population viability of fish species, particularly Oregon Coast coho salmon and other salmonids within the upper Nestucca River watershed.

#### Willamina Watershed

Refer to Appendix 4, Matrix of Pathways and Indicators, for additional discussion of the environmental effects of this alternative, including any interrelated or interdependent actions, on relevant indicators. Refer to Appendix 5 for a discussion of the alternatives relative to the Aquatic Conservation Strategy Objectives.

Approximately 200 downed trees would be removed from 3 patches of blowdown, which is less than 50% of the total number of downed trees and standing snags in these patches. A portion of these trees (about 25%) are located in RR along small, non-fish bearing streams. Trees from the 2 smaller blowdown patches would only be removed by helicopter yarding, which would create very little disturbance, and there would be a 50 foot buffer along all stream from which no trees would be taken, which would create almost no disturbance, thus there is virtually no chance of increasing sediment input to streams and increasing turbidity. The larger patch would be yarded by helicopter or possibly a cable system. The work would be done during the dry season, logs/trees would be yarded uphill (away from any streams), there are relatively few trees to be taken (approximately 160 which is less than 50% of the blowdown), and very few if any trees

would be removed from RR in the large patch, therefore the possibility of sediment reaching streams and increasing turbidity is negligible. There is a small possibility of a chemical (fuel, hydraulic fluid) leak or spill from equipment used to yard the logs, however the likelihood of any contaminants reaching the stream is negligible and there would be no chronic contamination. Trees removed would be a minimum of 50 feet away from streams. None of the trees removed would be in the streams or within the floodplains, and due to the topography, the probability of any of these trees moving into the streams in the future and functioning as large woody debris is low.

Due to negligible possibility for adverse impacts, the ESA call for Upper Willamette steelhead, and designated critical habitat for Upper Willamette steelhead and Upper Willamette chinook salmon would be “May Affect, Not Likely to Adversely Affect”. No call is made for Upper Willamette chinook salmon because there are no records of this species occurring within the Willamina watershed, either currently or historically. However, the Willamina Creek drainage was included in the critical habitat designation for Upper Willamette chinook. Potential adverse impacts would be negligible and would not result in a trend toward federal listing or lead to any loss in population viability of any fish species within the Willamina Creek watershed.

### Cumulative Effects

Trends in fish populations are described under the cumulative effects in section 3.2.2.1. The projects described under the proposed action, combined with past and potential future restoration efforts on federal, state and private land, would result in long term, cumulative beneficial effects to fish habitat within the Nestucca watershed. Any adverse impacts to fish and aquatic habitat if the proposed projects were implemented would be short term, therefore no cumulative adverse impacts are anticipated.

Taking less than half of the downed wood out of 3 blowdown patches within the Willamina Creek watershed is expected to have negligible impacts, thus no adverse cumulative effects are expected.

### **3.2.2.3 Alternative 3**

#### Nestucca Watershed

Refer to Appendix 4, Matrix of Pathways and Indicators, for additional discussion of the environmental effects of this alternative, including any interrelated or interdependent actions, on relevant indicators. Refer to Appendix 5 for a discussion of the alternatives relative to the Aquatic Conservation Strategy Objectives.



If Alternative 3 was implemented, both beneficial and adverse impacts would be similar to those described for the proposed action. The beneficial impacts would be less because Alternative 3 does not allow equipment in the stream channel therefore fewer logs and almost no boulders would be placed instream, resulting in less habitat enhanced and possibly less effective placement of the instream structures. The replacement of the Ginger Creek culvert would not occur, thus the culvert would still be a fish passage barrier at some flows, and the potential for the culvert to plug and fail would remain. Short-term adverse impacts to fish would also be less because there would be no equipment operating in the stream channel and the replacement of the Ginger Creek culvert would not occur. There would be a lower probability of fuel/hydraulic spills, and less chance for sedimentation and turbidity in the streams.

Overall, adverse impacts to fish, if they occurred, would be short-term. Adverse impacts may still involve loss of reproductive success, loss of individuals from the population, and short term loss of habitat elements. Beneficial impacts would be both immediate and long-term. Due to the chance for short-term impacts that may result in *take* of Oregon Coast coho salmon, the ESA call would be “May Affect, Likely to Adversely Affect”. Due to the short term impacts to water quality, the call for Oregon Coast coho designated critical habitat would be “May Affect, Likely to Adversely Affect”, however the overall impact to critical habitat would be beneficial. Potential adverse impacts would not result in a trend toward federal listing, nor would they lead to any loss in population viability of any fish species. Beneficial impacts would be expected to result in increased population viability of fish species, particularly Oregon Coast coho salmon and other salmonids within the upper Nestucca River watershed.

#### Willamina Watershed

The effect would be the same as described for Alternative 2 under Willamina Watershed in Section 3.2.2.2.

#### Cumulative Effects:

Trends in fish populations are as described under Cumulative Effects in section 3.2.2.1. The projects described under the Alternative 3, combined with past and potential future restoration efforts on federal, state and private land, would result in long term, cumulative beneficial effects to fish habitat within the Nestucca watershed. Any adverse impacts to fish and aquatic habitat if the projects in Alternative 3 were implemented would be short term, and would be separated both spatially and temporally, therefore no cumulative adverse impacts are anticipated.

Taking less than half of the downed wood out of 3 blowdown patches within the Willamina Creek watershed is expected to have negligible impacts, thus no adverse cumulative effects are expected.

### **3.3 Vegetation**

### **3.3.1 Forest Vegetation**

#### **3.3.1.1 Affected Environment**

The project area consists of upland and riparian habitat types. The uplands along the Nestucca River have a closed overstory canopy of 80-120 year old Douglas-fir (*Pseudotsuga menziesii*) with occasional big leaf maple (*Acer macrophyllum*) and western red cedar (*Thuja plicata*). The area is interspersed with tracts of recently planted or recently cut stands. The shrub layer is dominated by vine maple (*Acer circinatum*) with a layer of sword fern (*Polystichum munitum*) and grasses underneath. In edges and areas with more light, oceanspray (*Holodiscus discolor*) and snowberry (*Symphoricarpos albus*) occasionally appear.

Within the riparian zone, red alder is the dominant overstory tree with some big leaf maple and western red cedar. The dominant shrubs are willow (*Salix* sp.), salmonberry (*Rubus spectabilis*), thimbleberry (*Rubus parviflorus*), red elderberry (*Sambucus racemosa*), and stink currant (*Ribes bracteosum*). Salmonberry, thimbleberry, and stink current form dense and exclusive thickets in places, especially where openings exist in the canopy.

The Nestucca's river bed and banks are rocky and generally without accretions of riparian mosses, lichens, or plants. This may be due to the high amount of disturbance that occurs each winter at peak flows. There are occasional rock walls that possess a dense bryophyte flora. Bear Creek is also rocky but the rocks are smaller, and are less prevalent on the banks. In general, there is a greater variety of riparian forbs present in Bear Creek than is commonly seen on the Nestucca River.

Within the Willamina Creek Watershed, the three blowdown patches have a limited overstory canopy of 80-120 year old Douglas-fir, (*Pseudotsuga menziesii*) mainly on their edges with occasional big leaf maple (*Acer macrophyllum*) and western red cedar (*Thuja plicata*). The area is interspersed with tracts of recently planted or recently cut stands. The shrub layer is dominated by vine maple (*Acer circinatum*) with a layer of sword fern (*Polystichum munitum*)

#### **3.3.1.2 Environmental Consequences**

Several different habitats may be affected by the proposed action. The river channel and banks may be subjected to the physical disturbance associated with the placement of logs and rocks and machinery operation in these areas. The forested slopes above the river may be subjected to the physical disturbance caused by falling and dragging trees to the river, and the associated loss of host trees or colonized substrates. Access trails may be subjected to the physical disturbance and compaction associated with vehicle use.

The affects of actions involving the blowdown patches in the Willamina Creek Drainage, may include disturbance to colonized substrates by the removal by helicopter or yarding equipment.

##### **3.3.1.2.1 Alternative 1 (No Action)**

No actions would occur, so effects would be limited to those that occur naturally including disturbance during high water events, late season drying due to compromised flood plain connections and less storage of sediments and large wood that provide the establishment points for annual species and the common source of conifer establishment for the future. The blowdown patches would remain unchanged and so no effects would occur.

#### **3.3.1.2.2 Alternative 2 (Proposed Action)**

In order to provide shade, create a future source of large wood for the system and mitigate site disturbance associated with stream structure installation access, up to 7 acres throughout the proposed action area would be planted in native trees, shrubs and grasses in areas disturbed by machine access points, riparian areas lacking desired habitat components (i.e. shade, native species, wildlife habitat and soil stabilization) and at the culvert replacement site. Native plants to be used for this area will depend on site and may include trees (Red Alder, Black Cottonwood, Big Leaf Maple, Western Red Cedar, Western Hemlock, Douglas Fir, Sitka Spruce), shrubs (Indian Plum, Elderberry, Vine Maple, Cascara, Ninebark, Serviceberry) and native grasses. Implementation would occur both during project work (site disturbance) and in other areas as planting stock becomes available. Effects of falling or pulling onsite trees could be both beneficial and adverse. The change in location of the trees from the hillsides adjacent to the action areas or those brought in from offsite would cause mechanical damage to vegetation and may adversely affect individual plant species of concern. However no loss of population viability is expected due to the small stream side area that is expected to be disturbed. Beneficial effects include the increase in species diversity by planting and the increase of large wood and flood plain connections which will likely create a more complex botanical community through time. Surveys would be completed as needed where new ground disturbing activities may take place (i.e. access trails, log dump sites).

The blowdown patches in the Willamina Creek Drainage would continue to function as they are currently. The removal by helicopter or yarding equipment of a portion of the down trees will not change the current forest vegetation community.

#### **3.3.1.2.3 Alternative 3**

The effects of this Alternative would be the same as discussed in section 3.3.1.2.2.

### **3.3.2 Special Status Plant Species**

#### **3.3.2.1 Affected Environment**

Special status plant species to be surveyed for include: Species listed under the BLM Manual 6840 categories, Survey & Manage Species listed under the Salem District Record of Decision, and any species listed under the *ESA* (Appendix 6). Botanical surveys would be completed in areas where new ground disturbing activities would occur according to the following protocols.

Survey & Manage Component 2 Bryophytes - December 11, 1997, Component 2 Lichens - March 12, 1998, Protection Buffer Bryophytes Dec 3, 1999, Strategy 2 Vascular Plants Dec 1998 and Protection Buffer Fungi Version 1.3 December, 1999.

Surveys for lichens, bryophytes, and vascular-plants were done to protocol on May 24, 2000 in the three blowdown patches (T3S R6W Sec 28, T4S R7W Sec 26, and T4S R7W Sec 25). The following is a list of species of concern that were found.

<u>Species</u>	<u>Location</u>	<u>Status</u>
<i>Antitrichia curtipendula</i>	Sec. 28, 26	S&M 4
<i>Ulotia megalospora</i>	Sec. 28, 26	Protection Buffer
<i>Loxosporopsis corallifera</i>	Sec. 28	S&M 1,3
<i>Lobaria scrobiculata</i>	Sec. 26	S&M 4
<i>Pseudocyphellaria anomala</i>	Sec. 26	S&M 4
<i>Pseudocyphellaria anthraspis</i>	Sec. 26	S&M 4
<i>Sticta fuliginosa</i>	Sec. 26	S&M 4
<i>Sticta limbata</i>	Sec. 26	S&M 4
<i>Peltigera collina</i>	Sec. 26	S&M 4
<i>Nephroma laevigatum</i>	Sec. 26	S&M 4
<i>Helvella compressa</i>	Sec. 26	S&M 1,3

*Ulotia megalospora* was common and was present on shrubs in addition to the downed trees. It was also present in the adjacent standing timber. *U. megalospora* is a common moss that is well established on shrubs and in the tree canopy, and is found in all stand ages (Survey Protocols for Protection Buffer Bryophytes, v. 2.0, 12/1999). The Management Recommendations for Bryophytes (v. 1.1, 10/1996) state that the risk to the preservation of this species is low, and that protection is not required if there is habitat continuity over time within the watershed.

*Loxosporopsis corallifera* grows on the boles of conifer trees in stands of young (50-70 year old) to old-growth forests and tolerates edges at least at higher elevations. The lichen occurred on standing trees and snags at the edge of the blowdown in section 28 and continued into the standing timber. In the Management Recommendations for Lichens (v. 2, 3/2000) the major threat to *L. corallifera* is stated to be the disruption of ecological conditions, particularly the removal of colonized substrate. The management recommendations dictate the preservation of ecological conditions for any population.

In the Management Recommendations for Survey and Manage Fungi (v. 2, 9/1997), *Helvella compressa* is stated as being found in a wide variety of forested and non-forested habitats and can be associated with light to moderate disturbance. As such it is a candidate for removal from the list of species of concern and requires no special protection. The individual was located in a vine maple (*Acer circinatum*) thicket outside of the blowdown area.

Information is currently being gathered regarding strategy 4 species but no special protection efforts are required for these species.

An ACEC (Area of Critical Environmental Concern), the Nestucca River ACEC is located within the 17 mile river reach in the Upper Nestucca Watershed.

### **3.3.2.2 Environmental Consequences**

#### **3.3.2.2.1 Alternative 1 (No Action)**

No actions would occur, so effects would be limited to those that occur naturally including disturbance during high water events, late season drying due to compromised flood plain connections and less storage of sediments and large wood that provide the establishment points for annual species and the common source of conifer establishment for the future. No surveys would be completed.

#### **3.3.2.2.2 Alternative 2 (Proposed Action)**

Effects of falling or pulling onsite trees could be both beneficial and adverse. The change in location of the trees from the hillsides adjacent to the action areas or those brought in from offsite would cause mechanical damage to vegetation and may adversely affect individual plant species of concern. However no loss of population viability is expected due to the small stream side area that is expected to be disturbed. Beneficial effects include the increase in species diversity by planting and the increase of large wood and flood plain connections which will likely create a more complex botanical community through time. Surveys would be completed as needed where new ground disturbing activities may take place (i.e. access trails, log dump sites). Of the five plant species of concern listed in the Nestucca ACEC Management Plan four no longer have special status. A remaining species, *Poa maritima*, is a Bureau Tracking species, and requires no surveys at this time.

No populations of survey and manage species would be negatively affected by removal of the blown down logs in the Willamina Creek Watershed. The moss *Ulota megalospora* was present on shrubs and in the remaining standing timber in both sections where it was located, and so should persist in the area. The lichen *Loxosporopsis corallifera* was found in the standing timber adjacent to the blowdown in section 28. Some additional blowdown may be expected due to the wind created by the helicopter if the trees on the edge of the blowdown patch are less windfirm. However, the population extended into the timber for some distance and so should be secure. The individual of *Helvella compressa*, a fungi, was located a short distance from the blowdown. The removal of logs would not physically impact the site nor radically change its ecological conditions. As such, no loss of population viability is expected.

#### **3.3.2.2.3 Alternative 3**

The effects of this Alternative on special status species would be the same as those discussed in section 3.3.2.2.2.

### **3.3.3 Noxious Weeds**

#### **3.3.3.1 Affected Environment**

Common roadside weeds are expected to occupy disturbed sites. To reduce the risk of noxious weed introduction to the project areas all heavy machinery will be power washed before entering the project area. See Appendix 6 for list of species.

#### **3.3.3.2 Environmental Consequences**

Direct and Indirect Effects - Some degree of noxious/exotic weed introduction or spread is probable as management activities occur in the project areas. However, cumulative effects can be minimized by planting native species (as planned) and, if given enough time, the land could return to its historical characteristics.

Effects of Alternatives - The vehicle traffic associated with the action alternatives could continue to contribute to the spread of noxious/exotic weeds along logging or access roads. With ongoing monitoring and treatment programs (road side brushing), none of the alternatives would be expected to increase noxious/exotic weeds beyond controllable levels.

##### **3.3.3.2.1 Alternative 1**

Would not increase the spread of noxious/exotic weeds beyond the current potential because no action would occur (no disturbance).

##### **3.3.3.2.2 Alternative 2**

May contribute to the spread of noxious/exotic weeds beyond the current potential as some ground disturbance is anticipated. However, design features such as power washing of equipment and active planting after any ground disturbance would minimize spread of weeds and provide the means for native plants to dominate these sites.

##### **3.3.3.2.3 Alternative 3**

May contribute to the spread of noxious/exotic weeds beyond the current potential as some ground disturbance is anticipated. However, the very limited amount of ground disturbance makes this alternative unlikely to notably increase noxious weed amounts.

Cumulative Effects - Vehicle traffic associated with the foreseeable actions would continue to contribute to the spread of noxious/exotic weeds along open logging roads. Transported seed will establish mostly along open roads. These activities and the effects associated with future management will likely result in a cumulative effect of a minimal increase in total infested acreage. Increases are expected to be minimal as canopy cover is expected to be maintained and active planting with native species will commence immediately after ground disturbances.

Noxious/exotic weed monitoring and control methods have been planned and scheduled. These methods will likely slow the spread of existing populations and limit new introductions.

### **3.4 Soil**

#### **3.4.1 Affected Environment**

Soils affected by this project consist predominantly of the Ginsberg, Harslow, Hemcross, Klistan, and Olyic series and road fill material. These natural soils formed from basalt, breccia, tuffaceous sandstone and siltstone and are moderately fine textured, shallow to very deep. They are rated moderate or high physical buffering resiliency, rebounding quickly from stress. The road fill material is moderately coarse grained, gravelly soil. Hillslopes adjacent to most of the streams are steep, typically 60 to 75%. Debris slides and debris flows are the dominant mass movement in the area, often occurring on steep inner gorges of streams.

#### **3.4.2 Environmental Consequences**

##### **3.4.2.1 Alternative 1 (No Action)**

No change in the current soil resources would result from implementing this alternative since there would be no ground disturbing activities.

##### **3.4.2.2 Alternative 2 (Proposed Action)**

Direct and indirect effects of the Proposed Action would be the removal of riparian vegetation, localized displacement and compaction and short-term erosional effects of ground disturbing activities. The primary ground disturbing activities would be removal and replacement of Ginger Creek culvert, felling and pulling or yarding of trees, transportation of heavy equipment, and placement of logs and boulders.

*a)* Ginger Creek culvert replacement (Project 1). It is expected that there would be minimal, short-term erosional effects of construction activities. Stored sediment behind the culvert will pass through the stream system. Replacement of the structure would greatly reduce the possibility of future road fill damage and major soil movement into the adjacent streams. No or very little new compaction or displacement would be anticipated.

*b)* Felling and pulling of trees (Projects 2, 4, 5, 6 ). Minimal hillslope soil displacement and erosion are expected. The largest risk of displacement and soil erosion would occur when pulling trees with attached rootwads downhill. Water bars would be constructed where gouging occurred in yarding corridors and implemented before fall rains. There is a small risk that roads and ditches could be gouged when pulling trees across the roads. The road surface would be repaired if damaged and additional fill in ditches would be removed. Removal of approximately 200 trees from the three blowdown patches in the Willamina Creek watershed would result in

little soil disturbance. Use of a helicopter for tree removal would result in minimal soil disturbance. The use of cable yarding equipment would result in a small amount of soil disturbance and compaction.

c) Placement of logs and boulders and accessing heavy equipment (Projects 2, 4, 5, 6). Logs and boulders would be stockpiled at designated locations adjoining the project reaches. They would be dragged and dropped over hillsides and placed in the stream channel as individuals and clusters. Eighteen drop sites at 7 reach locations are anticipated. Placement of material in the stream would be by an excavator or related equipment or directly by the use of a helicopter.

Equipment access from paved roads into the stream would require the development of temporary access trails. It is anticipated that up to 18 trails would be needed within 6 stream reaches. Four of the trails would be new trails, totaling about 355 feet. The remaining trails would use old access trails from previous timber management and stream enhancement activities, thus reducing the amount of new disturbance to the riparian area. Preparation of access trails would include removing a small amount of vegetation (primarily brush and red alders, but also a few conifer trees). Riparian vegetation removed would constitute a very small portion of the stream side influence and would be replanted with native vegetation.

Prior to project implementation, the Resource Area Soil Scientist would evaluate streambanks and adjacent hillslopes for stability and erosion risk. Access trails would be located in areas to minimize ground disturbance, and avoidance of sensitive sites including conifers, large coarse woody debris, and S&M species. A majority of the stream channels consist of bedrock or large gravel.

Soil exposure is not expected to persist for more than one to three years before full vegetative cover is re-established. Erosion control measures would be implemented before fall rains in any individual trails that show the potential for continuing erosion, channelization, or sediment delivery to streams. Therefore, erosive losses are expected to be small and short-term. Approximately 0.6 acres would be compacted from moving heavy machinery. Compaction levels would be low because the project would be implemented during the summer when the soil moisture content is low and the soils are strong. Upon completion of instream work, compacted access trails would be subsoiled with the excavator, and felled trees and shrubs would be scattered over the disturbed sites, thus reestablishing permeability and organic layer. Access trails would be water barred and blocked, where appropriate. Instream project work would take place during low flow conditions, generally between August 1 and September 15 which is inside the ODFW instream work period.

Cumulative Effects: No cumulative effects are anticipated from this action because effects are limited in space and are short-term in nature.



### 3.4.2.3 Alternative 3

With this alternative, soil resources adverse effects are expected to be minimal (less than 0.3 acres of soil compaction and displacement). By excluding the replacement of the Ginger Creek culvert, potential soil effects from that action would be removed. Only about a third the number of trees in Alternative 2 would be felled and dragged downslope. Alternative 3 would have about half the number of access trails and associated compaction and displacement area of Alternative 2. Removal of 200 trees from the blowdown patches in Willamina Creek watershed would have the same amounts of soil disturbance and compaction as Alternative 2.

Cumulative Effects: No cumulative effects are anticipated from this action because effects are limited in space and are short-term in nature.

## 3.5 Water

### 3.5.1 Affected Environment

The proposed treatment area is located within the Nestucca watershed. The beneficial uses of water in the Nestucca Basin are listed in the Oregon Administrative Rules (OAR 340-41-442). For this analysis area they include: Public and domestic water supply, industrial water supply, irrigation, livestock watering, anadromous fish passage, salmonid fish spawning, resident fish and aquatic life, wildlife and hunting, fishing, boating, water contact recreation, aesthetic quality and hydro-power. The town of McMinnville has water rights for surface water above the analysis area. The following table summarizes the beneficial use of a stream and its distance from the project area.

**Table #6. Beneficial Uses of Water in the Upper Nestucca River Watershed**

<b>Beneficial Use</b>	<b>Data Source</b>	<b>Stream</b>	<b>Project Action</b>	<b>Distance from Project Action</b>
Resident Fish	BLM	Elk, Bear, Ginger Creeks and Nestucca River	Restoration of Habitat components	In Stream Work
Anadromous Fish	BLM	Elk, Bear, Ginger Creeks and Nestucca River	Restoration of Habitat components	In Stream Work

Anadromous Fish (Listed)	BLM	Elk, Bear, Ginger Creeks and Nestucca River	Restoration of Habitat components	In Stream Work Adjacent
Municipal Use	WRIS*	Nestucca River	None	greater than 10 miles
Domestic Use	WRIS	Nestucca River	None	greater than 10 miles

\* Water Right Information System

The Nestucca River is identified as water quality limited by Oregon Department of Environmental Quality (ODEQ) in the 1998 list of water quality limited streams (303(d) list). A water quality limited waterbody is one that is not expected to meet State surface water quality standards. The upper Nestucca River, headwaters to Powder Creek, is listed as water quality limited due to poor habitat conditions (lack of large wood) and sedimentation as a water quality problem. The lower Nestucca River (mouth to Powder Creek) is listed for high summer temperatures and reduced stream flows.

Part of the wood for the project could come from outside the project area in the Willamina Creek drainage, a tributary to the South Yamhill River. It has similar beneficial uses of water as the Nestucca Basin. The city of Willamina has water rights for surface water in the analysis area.

Willamina Creek is identified as water quality limited by Oregon DEQ in the 1998 list of water quality limited streams (303(d) list). Willamina Creek is listed as water quality limited due to phosphorus and fecal coliform. The Deer Creek, Panther Creek, Willamina Creek and South Yamhill River Watershed Analysis (BLM, 1998) identified water temperature and sediment as likely water quality problems, however no data was available to substantiate any specific problems. Streambank stability is generally poor. Streambed substrates in the riffles have low to moderate levels of fines, indicating that sediment accumulation in spawning gravels is not a major concern. Removal of approximately 200 downed trees from the three blowdown patches in the Willamina Creek watershed would result in little, if any increase in the amount of sediment delivered to stream channels. The patches are small, total approximately 9 acres and tree removal would be a minimum of 50 feet away from stream channels. Measurable increases in turbidity from the proposed action are unlikely.

A primary influence on stream habitat and water quality in lower Bear Creek and the Nestucca River is an area of mass soil creep. A large mass of deeply weathered pyroclastic rocks and interbedded, shaly siltstones and claystones is creeping downslope onto Bear Creek. The slide, exceeding 50 feet in depth, and influencing up to a mile of stream channel, is moving at approximately 0.6 inches per year (Swanston and Swanston 1976). High flows each winter cut away at the encroaching stream bank and sometimes undercut the far bank. Large amounts of sediment, much of it fines, are deposited into lower Bear Creek and transported downstream into

the Nestucca River. Bear Creek generally remains turbid after each winter storm much longer than other Nestucca River tributaries. Heavy bedload in lower Bear Creek have filled pool areas and gravel spawning beds downstream with fine sediment. The Bear Creek creep is probably the largest single source of chronic suspended sediment in the Nestucca River watershed.

Forest management activities in the creep area have been limited to construction of one rocked road which crosses the lower third of the slide and 40 acres timber harvest in 1991. The road intercepts surface and groundwater and has slumped periodically, but it does not appear to have increased the rate or extent of creep.

Restoration activities associated with soil creeps are limited simply because of its massive size and mechanisms at work. Stabilizing the site would require extensive investigation, engineering analysis and design work at a very high expense. This natural phenomenon is in spite of some intensive efforts is going to continue to move. The most practical and economical treatment of the slide area is to continue road and drainage maintenance.

### **3.5.2 Environmental Consequences**

Water quality may be affected by factors associated with implementing stream restoration and enhancement activities.

#### **3.5.2.1 Alternative 1 (No Action)**

Under the No Action Alternative, the existing Ginger Creek culvert will continue to act as a control, causing stream adjustments upstream, including continued accumulation of fine and coarse sediments deposited as bars. The risk of plugging would remain. Eventually, the undersized culvert would likely fail, resulting in road fill damage, blockage of the road segment, and delivery of large quantity of sediment and debris, degrading the water quality within Ginger Creek and Nestucca River drainage. Other than the culvert replacement, the current water quality conditions would remain the same. Hillside erosion rate and the sedimentation regime would continue at present response rates depending upon natural disturbances to vegetation and soils. The stream channels will continue to evolve and would at some point in the future achieve stability and natural levels of complexity.

#### **3.5.2.2 Alternative 2 (Proposed Action)**

Under the Proposed Action Alternative, the existing undersized culvert at Ginger Creek would be replaced and logs and boulders would be placed in the stream channels. The alternative incorporates a number of design features to minimize the adverse effects on water quality both on-site and downstream. Implementation of the alternative, however, would result in an increase in channel and streambank disturbance and associated transient increases in sediment to the stream system.

a) Ginger Creek culvert replacement (Project 1). The proposed action would employ the design features and management directives including Best Management Practices listed in Chapter 2 of this EA.

A small amount of vegetation and soil would be disturbed when the culvert is being removed and replaced. A small quantity of sediment from construction activities would likely enter Ginger Creek and increase turbidity for one quarter of a mile to one mile downstream, depending on stream flows at the time. Increased levels of turbidity would be expected to last for a day or less. A small amount of fine sediment would accumulate in the bottoms of pools.

After the culvert is replaced, the stream will strive to establish a new grade, cutting down the stored sediment behind the culvert with each high-flow event. Approximately 250 cubic yards of stored sediment were present in October 1999. About 60 to 80 percent of the stored material is composed of gravel and cobbles, less than 5% is silt or clay and the remaining material is sand. Sediment will enter the streams mainly during high stream flows caused by fall and winter storm fronts.

The sediment regime and routing process should return to a normal functioning condition after several large/high flow events over a course of two or three winters. Even though the portion of silt and clay is small, there may be an increase level of turbidity in comparison to the background levels in Ginger Creek and a short distance downstream of its confluence in Nestucca River. The timing and delivery would coincide with other high levels of sediment already present during flow events in the Nestucca River drainage. Any effects are likely to be within the natural range of variability of the watershed and be short-lived.

Replacement of the Ginger Creek culvert would bring long-term benefits. It would minimize disruption of natural hydrologic flow pathways and return stored sediment (mostly favorably sized sand and gravel for fish) which would otherwise have been mobilized downstream if the culvert had been properly functioning. It would improve existing stream crossing structure to accommodate 100-year floods, and it would improve fish passage at the road crossing.

b) Placement of stream structures in Nestucca River, Bear Creek, and Elk Creek drainage areas (Projects 2-7).

Dragging trees over and through streambanks could lead to bank erosion resulting from gouging of soil and removal of protective vegetation cover. Gouging a trough could alter surface and subsurface flow patterns and lead to an increase in the amount of sediment reaching the surface water. If roots remained attached and are not washed, soil would enter the stream directly. Operating heavy equipment over land adjacent to streams and in stream channels and placing logs and boulders in stream channels would disturb soils and destroy vegetation and possibly destabilize streambanks. While stream beds in the proposed instream work areas are bedrock dominated, the use of an excavator in stream channels would stir up some existing fine sediment within the reaches where work takes place.

The instream portion of the proposed action would result in an increase in turbidity and suspended sediment levels in streams, and at a few times probably exceed state water quality standards at a single point in time, but would not exceed the two hour period in the general waiver. Most of these increases are expected to be minimal and of short duration, usually dissipating in a few minutes within less than a mile. The duration and length of spread would depend upon the specific site conditions and the amount of ground/streambed disturbance created. The source of the turbidity and sedimentation would be from primarily river deposits of sand and gravel, not from silt and clays which remain in suspension for long periods. Damage to streambanks would be short-term once vegetation is reestablished.

Placement of a major portion of offsite wood by a helicopter is an alternative to hauling in pieces by truck and installing them with heavy equipment. Placement could occur in restoration segments over multiple years over the 5 years time span or in one block of time ( i.e., two weeks). Once dropped, most of the wood would remain in place. This action should reduce the use of heavy equipment in a stream segment. A helicopter would also reduce the number of access drop points reducing ground disturbance. The increase in turbidity would be somewhat less than hauling everything by truck. There would still be an increase in localized turbidity levels at individual sites when trees/logs are placed in the stream, however state water quality standards would not be exceeded outside the general waiver provisions. Again, the size and spread of the sediment plume would depend upon site conditions and amount of disturbance. However, restoration activities in individual stream segments would likely be separated by miles over days in many instances precluding a cumulative or additive effect on turbidity.

Careful design and implementation of the stream structures will help minimize the risk of stream bank erosion, increase sedimentation, and adverse alteration of channel morphologies. There is a possibility that improperly placed large woody material and boulders could cause sediment and woody debris to accumulate at inappropriate locations, or water is directed to inappropriate locations, an undesirable change in stream flow patterns could occur. A change in stream flow patterns could result in increased bank erosion at locations inside and outside the project area as the stream system reacts to changes in stream energy. If impacts occurred, they would be both short and long-term in duration. With the use of design features and proper project implementation, the indirect risk of resource damage is expected to be low.

The proposed actions are unlikely to affect water temperatures. Only a small amount of vegetation would be removed, constituting a very small portion of the stream side influence zone and direct shade off the streams. Vegetation would be quickly replanted. The overall effects of the proposed project on water temperature are expected to be neutral in the short-term and beneficial in the long-term.

Long-term water quality would be improved after project implementation in areas where instream and riparian work are completed. The proposed actions associated with the placement of trees and boulders would increase the distribution, complexity and diversity of the watersheds. Sediment routing would be altered as woody debris and sediment accumulate behind these structures and are released in pulses during winter storm events, thus approaching a more natural sediment routing regime. These stream structures would also increase the water levels behind them during high flow events, which would help to restore the streams connectivity with floodplains and would benefit streambank stability and sediment routing.

d) Log hauling. There may be a small increase in sediment to the streams associated with log hauling if conducted during the wet season. Log hauling during wet conditions is not likely because the project(s) would be implemented in late summer. However, if wet weather log hauling did occur, increased sedimentation is expected to be minimal. This is because the roads that would be used are surfaced with asphalt or durable crushed rock, capable of supporting log hauling during wet conditions without breaking down or piping sediment from under the running surface.

e) Fuel or hydraulic oil leaks. Fuel or hydraulic oil leaks are a potential risk to aquatic habitats. All fuels, lubricants, and any other toxic materials will be stored outside the riparian area of the stream and located in an area where the material will be contained and prevented from entering a stream. The greatest risk is for a large spill would occur when equipment is operating in the active channel. To help reduce this risk, equipment would be checked daily for leaks of hydraulic fluids, cooling system liquids. Equipment would be clean prior to entering the site. All fueling would be done outside of the riparian zone. Containment booms onsite would be required for all contractors during instream or near stream work. A contingency plan will be developed for the use of all hazardous materials, including spill containment, clean-up, and notification of the appropriate federal and state agencies in the event of a problem.

Cumulative Effects: A cumulative effects analysis was done to determine the effects of known and anticipated activities on water quality in the Nestucca River. The scale of the analysis is the entire Nestucca watershed, which encompasses approximately 163,000 acres. Known and anticipated activities are listed in Appendix 3 - Past, Present, and Reasonably Foreseeable Future Actions. It is assumed that activities on private and other government lands would be done in compliance with applicable county, state, and federal laws and regulations, such as the Oregon Forest Practices Act and the federal Clean Water Act.

About 65% of the watershed is administered by the BLM / US Forest Service, about 17% is owned by large private industrial wood product companies, Oregon Department of Forestry manages about 5% , and the remaining 15% is owned by private individuals and smaller companies, some of whom are managing their lands for timber production. The primary land use in the watershed is timber production, and has been for the better part of the 20<sup>th</sup> century. Logging of these highly dissected lands has resulted in an access road network with the average density being about five miles of road per square mile of land.

Stream flows during low flow periods was identified as a concern for the Nestucca River, primarily because of excessive water rights allocations. There are approximately 360 valid water rights for surface water in the watershed. The maximum period of irrigation withdrawals (a major use in the lower watershed) coincides with low flow periods of the Nestucca River. Near the confluence of Beaver, the instream rights commonly exceed the net flows during August, September, and October.

An analysis of the cumulative effects of the proposed action and other known and expected actions in the Nestucca River watershed indicates that most of the water quality indicators are at present not properly functioning or at risk. The anticipated activities are expected to maintain the condition of these indicators and restore a number of them. There will no long term degradation of water quality indicators as a result of this action, therefore there will be no cumulative effects on water quality.

The cumulative effects analysis focused on physical and biological baseline indicators adopted from the Matrix of Pathways and Indicators used for section 7 consultation for listed or candidate -for-listing anadromous fish, which is displayed in Appendix 4 and summarized in section 3.2 along with the fisheries habitat cumulative effects.

There are no cumulative effects anticipated in the Willamina Creek Watershed due to the limited nature of actions, their implementation during the dry season and the small amount of soil disturbance and compaction that may occur, as well as the expectation of no water quality impacts.

### **3.5.2.3 Alternative 3**

With this alternative in the Nestucca Watershed, direct water quality effects are expected to be smaller. There would be no short term erosional and sediment effects of construction activities associated with Ginger Creek culvert replacement. The natural hydrologic flow path would continue to be disrupted. Sediment would continue to accumulate behind the culvert. The culvert would continue to impede fish passage. The possibility of future road fill damage and major soil movement into the adjacent streams would continue.

As compared to Alternative 2, the proposed action, there is a minimal risk of increased sediment and turbidity levels associated with placement of rock and large wood in streams. Only about a third of the trees in Alternative 2, would be felled, dragged downhill and placed into streams. Heavy equipment would be excluded from stream channels. Logs would be placed in streams by using a helicopter, hand tools, or, in a few locations, by heavy equipment from the road or stream banks. It is not likely that turbidity would be visible downstream when helicopters are used, tree placement by helicopters is almost instantaneous.

There are no long-term effects anticipated in the Willamina Creek Watershed due to the limited nature of actions, their probable implementation during the dry season and the small amount of soil displacement and compaction that may occur, as well as the expectation of no water quality impacts.

Cumulative Effects: As compared to Alternative 2, the proposed action, no cumulative effects to water quality would occur under this Alternative in either the Nestucca or Willamina Watersheds.

## 3.6 Wildlife

### 3.6.1 Affected Environment

The streams where the proposed fisheries enhancement projects would occur are within the Nestucca River watershed of the North Coast Basin. The activities would occur primarily on lands allocated as RR and some activities would also occur outside of the RR's in the LSR and AMA land use allocations (Northwest Forest Plan land use allocations). More than half of the trees necessary for the project would be imported from sources other than the immediate streamside. Those trees may come from windthrown patches in the Willamina Creek watershed to the southeast of the Nestucca watershed from Section 28, T.3S., R.6W., Sections 25 and 26, T.4S., R.7W. If all of the trees required to complete all of the projects cannot be supplied by the streamside trees and from the windthrow patches identified above then the use of trees from other sources may be necessary which may require additional analysis in the future. It is expected that most of the trees would come from either the RR's or LSR's, but some may come from the AMA land use allocation. For the most part the entire area where the project activities would occur are to be managed to promote late-seral forest habitat conditions across the landscape.

The fisheries enhancement project is expected to potentially affect wildlife in two general ways; by modifying habitat (removing CWD, felling and/or pulling trees and direct ground disturbance) and direct noise disturbance to individual wildlife.

The *Late-Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area*, January, 1998 (LSRA) identifies all of the lands where activities would occur as *Core Landscape Zone* and *Mixed Seral Cell*. In general the goals of this landscape cell are to create new and enlarge existing patches of late-seral forest habitat. The LSRA indicates that much of the forest lands in the AMA contain much lower levels of coarse woody debris (CWD) than would be expected naturally. Some of the reasons for this are that the area has been burned repeatedly in a relatively short period of time, much of the sound large logs were salvaged, and many of the stands that are currently reaching maturity and would have begun to contribute CWD were thinned in the 1960's and 1970's, thus removing those trees that would have otherwise become CWD. Consequently, the area where the fisheries enhancement project would occur is in a CWD deficit condition. The proposed action would, in affect, redistribute CWD from a few areas where it is abundant to other areas within the LSR where it is deficit; and convert some of it from terrestrial habitat to aquatic habitat.

The proposed action would be planned to be implemented in segments over a 1-5 year period, depending on funding. The potential impacts to wildlife from habitat modification would occur in discrete areas in any given year, that is, for the most part the impact would only occur once. From a disturbance perspective however, the impacts to wildlife in some areas could occur in the same area several years in a row.



The following table lists wildlife species that could potentially occur within the Tillamook Resource Area and that have such status that their evaluation is warranted under NEPA.

**Table 7 Wildlife Species and Status**

<b>Project:</b> Nestucca Fisheries Enhancement Project				
<b>Common Name</b>	<b>ESA</b>	<b>NFP</b>	<b>BLM</b>	<b>Impact Synopsis</b>
<b>Mammals:</b>				
Columbian White-tailed Deer	FE	-	FE	No - Not within range
Fisher	-	-	BS	No - Presence unlikely; negligible impact to hab.
Fringed Myotis	-	ROD	BT	No - Negligible impact to habitat
Long-eared Myotis	-	ROD	BT	No - Negligible impact to habitat
Long-legged Myotis	-	ROD	BT	No - Negligible impact to habitat
Red Tree Vole	-	S&M	-	Yes - Felling of Douglas-fir trees
Silver-haired Bat	-	ROD	BT	No - Negligible impact to habitat
Townsend's Big-eared Bat	-	-	BS	No - Negligible impact to habitat
<b>Birds:</b>				
Aleutian Canada Goose	FT	-	FT	No - No habitat
Bald Eagle	FT	-	FT	Yes - Foraging, roosting, salmonid stream
Brown Pelican	FE	-	FE	No - No habitat
Harlequin Duck	-	-	BA	Yes - Potential disturbance: Possibly in stream
Lewis' Woodpecker	-	-	BS	No - Not within range
Marbled Murrelet	FT	-	FT	Yes - Potential disturbance
Northern Spotted Owl	FT	-	FT	Yes - Habitat modification (CWD); Disturbance
Northern Goshawk	-	-	BS	No- Negligible impact to habitat
Peregrine Falcon	-	-	BS	No - No impact to habitat
Purple Martin	-	-	BS	Yes - Presence unlikely; Possible impact
Yellow-breasted Chat (WV)	-	-	BS	No - Not in range
<b>Reptiles and Amphibians:</b>				
Columbia Torrent Salamander	-	-	BS	Yes - Possible impact to habitat
Cope's Giant Salamander	-	-	BA	No - Not in range
Oregon Spotted Frog	FC	-	FC	No - Not in range
Painted Turtle	-	-	BS	No - Not in range
Western Pond Turtle	-	-	BS	Yes - Potential habitat
<b>Invertebrates: (arthropods and worms)</b>				

American Acetropis Grass Bug	-	-	BS	No - No habitat
Insular Blue Butterfly	-	-	BS	No - No habitat
Oregon Giant Earthworm	-	-	BS	No - Not in range
Oregon Silverspot Butterfly	FT	-	FT	No - No habitat
Valley Silverspot Butterfly	-	-	BA	No - No habitat
Willamette Callippe Fritillary	-	-	BS	No - No habitat
<b>Invertebrates: (mollusks)</b>				
Blue-grey Tail-dropper	-	S&M	-	Yes - Affects to CWD - Potential habitat
Evening Fieldslug	-	S&M	-	Yes - Affects to CWD - Potential habitat
Malone Jumping-slug	-	S&M	-	Yes - Affects to CWD - Potential habitat
Oregon Megomphix	-	S&M	-	Yes - Affects to CWD - Potential habitat
Papillose Tail-dropper	-	S&M	-	Yes - Affects to CWD - Potential habitat
Puget Oregonian	-	S&M	-	Yes - Affects to CWD - Potential habitat
Warty Jumping-slug	-	S&M	-	Yes - Affects to CWD - Potential habitat

**ESA - Endangered Species Act:**

**FE** - Federal Endangered; **FT** - Federal Threatened; **FC** - Federal Candidate

**NFP - Northwest Forest Plan:**

**S&M** - Survey and Manage; **ROD** - Bat species whose roost sites are protected in the ROD

**BLM - 6840 Policy list:**

**BS** - Bureau Sensitive; **BA** - Bureau Assessment; **BT** - Bureau Tracking

**Impact Synopsis:**

**NO**- No appreciable impacts to the species or it's habitat, no further analysis will be conducted in the EA. **YES** - Impacts to a species or it's habitat will occur and further analysis will be conducted in the EA.

### **3.6.2 Environmental Consequences**

#### **3.6.2.1 Alternative 1 (No Action)**

The habitat condition for terrestrial wildlife under the "No Action" alternative would be little different from that described below under the "Proposed Action". No trees would be felled or pulled but rather would be left to fall naturally over time. There would be no potential disturbance to wildlife, and therefore no potential for "take" of any listed species. Habitat for survey and manage species and BLM 6840 policy species would be unaffected.

### **3.6.2.2. Alternative 2 (Proposed Action)**

#### **Wildlife Species listed or proposed under the Endangered Species Act:**

Consultation with the U.S. Fish and Wildlife Service concerning potential impacts to the following listed species will be conducted prior to a final decision for this project.

#### Bald Eagle - Federally Threatened(FT)

Bald eagles are sometimes seen foraging in the lower part of the proposed project area near Alder Glen campground, and are regularly seen 3-8 miles downstream from the project area. There is also an inactive eagle nest in the Elk Creek drainage above the reach proposed for repair and maintenance of existing structures. There are no known active nests in the proposed project area. Eagles that are observed in the Nestucca drainage are usually seen in the late winter and early spring, usually near the river.

The project proposes to fall several trees that potentially could be used as eagle roost sites above the river, however the trees would be selected such that other trees in the immediate vicinity of equal quality for roosting and/or foraging perches would be retained.

#### Affect Determination:

Since the proposed project is designed to benefit anadromous fish production which are a primary food source for eagles in the Nestucca drainage, and the action would not diminish the suitable roosting and/or foraging perch habitat for eagles in an appreciable way; the project would be a May Affect-Not Likely to Adversely to Affect the bald eagle due to the expected beneficial effect of improved fish stocks resulting in better foraging opportunities.

#### Marbled Murrelet - Federally Threatened(FT)

The proposed fisheries enhancement project would occur within marbled murrelet designated critical habitat. The project area varies from 18 to 25 miles from the ocean. Although the project would entail falling or pulling 100-160 trees that would be larger than 20 inches DBH and may be as large as 46 inches DBH, no murrelet habitat would be modified. The possible negative impacts to murrelets that could occur would be due to disturbing unsurveyed potential habitat during a portion of the breeding season. Some activities involving cutting, yarding, hauling and placing logs and/or rocks would have to occur during the murrelet critical breeding season between July 15 and August 5. All activities involving helicopter use would occur after August 5. Any activity that generates noise above ambient levels during any part of the breeding season would be restricted to those hours between two hours after sunrise and two hours before sunset. No helicopter flight corridors would be closer than ½ mile of any murrelet known sites.

#### Affect Determination:

The proposed action will not affect suitable habitat therefore will have No Effect on marbled murrelet designated critical habitat. Because some portions of the proposed action would have the potential to disturb unsurveyed suitable habitat during the end of the critical breeding period the proposed action May Affect - Likely to Adversely Affect the marbled murrelet.

#### Northern Spotted Owl - Federally Threatened (FT)

The proposed fisheries enhancement project would be located within designated critical habitat for the spotted owl. The nearest known occupied spotted owl site is approximately five miles from the closest enhancement activity site. Approximately 40% of the project would occur within the proposed Elk Creek Reserve Pair Area. Forested stands within and adjacent to the proposed project area are suitable owl nesting, roosting and foraging habitat. This suitable habitat has not been surveyed to fulfill protocol standards.

#### Habitat Modification:

The proposed action may remove approximately 200 trees from three windthrow patches in the Willamina Creek drainage. All of the patches are adjacent to young plantations and the windthrow resulted from harvest of the adjacent timber. One patch is approximately four acres and the others are two acres or less. The CWD resulting from the windthrow events are considered a primary constituent element of spotted owl habitat. However, the windthrow patches themselves are not owl habitat due to the lack of a closed forest canopy over them. The removal of some of the wood could affect rodent populations that are a source of prey for the spotted owl, but the proposed action would leave enough CWD at these sites to meet at least the moderate level for mid to late-seral stands as identified in the LSRA. It is expected that 20-40 trees of various size will be left per acre after removal of trees for fish structure, and therefore would still provide good habitat for owl prey animals.

In addition, the proposed action may include falling approximately 100-160 trees, 20-46 inches DBH (with the majority being less than 36 inches DBH) within the riparian reserve adjacent to the stream reaches (approximately 7 to 9.5 miles of stream reach) where the structures would be placed. These trees would be selected by a wildlife biologist and would not include any trees with structures that could be used for nesting for any ESA listed species or S&M species. In addition, trees with raptor nests or other special status species nests would not be felled. Trees would be selected in such a way as to avoid opening the canopy in any appreciable way.

#### Disturbance:

The proposed action would use a combination of methods to haul and place log and rock structures in the streams. The trees that would be input to the stream from the adjacent forest would be felled by chainsaw and then would be placed in the stream by a machine with a hydraulic boom or, if the tree fell into the channel with appropriate placement, would be left in place. The trees that will be imported from other sources will either be yarded by log loader or cable machinery and loaded on trucks to be hauled to the stream site, or the trees/logs would be

flown by helicopter from the windthrow patches to the stream. The method used and the timing of the operation would depend on the funding for the project in any given year. All helicopter operations would occur after August 5 of any year to limit disturbance to listed species, particularly the marbled murrelet, until after the critical breeding period. All other operations that generate noise above the ambient level may begin as early as July 15 of any given year to allow enough time to complete the instream work prior to September 15; the date when all instream work must cease to avoid adverse impacts to anadromous fish without specific authorization from ODFW. All activities that generate noise above the ambient level will commence no earlier than two hours after sunrise and cease two hours before sunset.

#### Affect Determination:

Although all practical measures would be employed to limit adverse affects to spotted owls and spotted owl critical habitat there may nonetheless be some minor negative impacts.

The proposed project -May Affect- Spotted owl -Critical Habitat- by felling or pulling scattered trees within suitable habitat and redistributing windthrown CWD from at least one location within designated Critical Habitat to other areas within Critical Habitat.

The proposed project May Affect-Not Likely to Adversely Affect the spotted owl species by felling or pulling some scattered trees within suitable spotted owl habitat, and because the project would have to occur during the non-critical portion of the breeding season resulting in disturbance to unsurveyed suitable habitat.

#### **BLM 6840 Policy Species:**

##### Harlequin Duck

The harlequin duck breeds on rocky, swift flowing rivers from the Rocky Mountains to the western Cascades, and now including the Coast Range of Oregon. Up until 1994 the harlequin duck was not known to breed in the Coast Range. The Nestucca River is the only known breeding location in the Coast Range. The first report of breeding there is from July of 1994. Since then there has been documented breeding behavior every year until 1999, when no ducks were observed during very limited survey effort. In 1997, there were two females with broods documented. The farthest upstream ducks have been observed is in the vicinity of the downstream end of the uppermost reach where instream activities would occur. Harlequins spend much of their time in riffles and glides except when rearing very young ducklings, when they spend time in the slower pool water. The female is the only brooding parent with the male leaving for the coast soon after nest initiation. The female begins moving the young down river within a few weeks after hatching in late May to mid June. It is estimated that by late August the female and the brood are in the vicinity of the estuary.

The proposed enhancement project is not expected to affect harlequin ducks to a great degree. It is possible that the ducks could still be in the river in the vicinity of some of the project areas while work is commencing. Since the ducks are highly mobile by the time any work begins they will be able to avoid disturbance simply by moving away from the site. The fact that the ducks use most of the river for foraging en route to the sea indicates that they are not dependant on any particular reach of the river for survival.

The river itself would not be modified in such a way as to cause any negative habitat modifications to the harlequin ducks breeding area, in fact the introduction of additional coarse wood that may cause log jams and additional boulders that can be used as loafing areas could benefit the harlequin duck.

In summary, the proposed action may cause some short term (less than a week) disturbance to females with young, but may also improve habitat in the future. This project will not contribute to the need to elevate the level of concern for the harlequin duck.

### Purple Martin

The purple martin is Oregon's rarest swallow. They nest in scattered populations along the coast and elsewhere in western Oregon. Purple martins are dependant on large snags with woodpecker excavations, mostly along watercourses, to nest; or martin "houses" that are put up and maintained by people, mostly along the coast.

Purple martins have not been observed along the Nestucca River but, although extremely unlikely, could possibly find nesting habitat in the vicinity of the proposed project. Snags are not plentiful along the river, especially large hollow snags. The enhancement project proposes to fall or pull up to 160 trees from the adjacent riparian area and, although it would be avoided as much as possible, this activity has the potential to destroy some riparian snags, thus potential martin breeding habitat.

Consequently, the proposed project has a very small possibility of negatively impacting the purple martin. Since a biologist would be selecting the trees to fall or pull, an effort would be made to see if martins are in the area at the time of selection to further reduce the likelihood that the project would impact martins. This project will not contribute to the need to elevate the level of concern for the purple martin.

### Columbia Torrent Salamander

Torrent salamanders inhabit cold clear springs, seeps, headwater streams, splash zones around waterfalls, and adjacent moist forest. Streams the size of the Nestucca River are not habitat for Columbia torrent salamanders, but it is possible some of the small frontage tributaries could harbor torrent salamanders, although rather unlikely. Nevertheless, the placement of large logs and boulders along the edge of the Nestucca could impact the lowest end of some of these small

tributaries, and therefore has an extremely slight possibility to impact torrent salamanders. This project will not contribute to the need to elevate the level of concern for the Columbia torrent salamander.

### Western Pond Turtle

Western pond turtles inhabit marshes, sloughs, moderately deep ponds and slow moving portions of creeks and rivers. The turtle require basking sites such as partially submerged logs and large rocks. Hibernation is usually in bottom mud. Western pond turtles have not been observed in the upper Nestucca River, but have been found in the lower reaches of some tributaries to coastal rivers. Although there are a number of slow pools that may be suitable for pond turtle during active periods, the wintertime high flows combined with the historic scouring of the upper Nestucca leave very little if any hibernating habitat. Consequently there is very little possibility that western pond turtles occur within the project area. The proposed project would have a negative affect on pond turtles in the unlikely event that a turtle were in the stream at the time and location where logs and boulders are placed. The project could have a long-term positive affect by creating larger pools and off channel habitat, and by trapping sediments and other debris that could accumulate and create hibernating habitat. This project will not contribute to the need to elevate the level of concern for the western pond turtle.

### **Survey and Manage Species:**

#### Red Tree Vole

The red tree vole is an arboreal rodent that is strongly associated with Douglas-fir forests. The red tree vole rarely comes to the ground and may live its entire life in a few acres. That portion of the proposed project where trees would be felled or pulled over from the adjacent riparian stands would occur in suitable red tree vole habitat. The project would require the trees proposed for falling and those in the vicinity of those to be felled would be surveyed to protocol to assure that no red tree vole nests are in the area. Trees to be felled would be selected in such a way as to not open the stand in any appreciable way.

In the infrequent cases where red tree voles come to the ground to disperse, they tend to remain hidden under heavy vegetation and/or down wood. Consequently, removing down wood could theoretically affect the red tree vole if it were using the area for dispersing. The area where the CWD would be removed is not considered red tree vole habitat any more. There are only a few live trees remaining and for the most part are not in contact with each other. Any voles that would be dispersing into the windthrown area would be moving toward a five year old plantation and would be moving away from suitable habitat. In either alternative, there would be enough trees left in the windthrow patches to meet at least the moderate levels of CWD identified in the LSRA for those age stands and should be adequate for vole use. In any case, if any trees would be removed that may affect the voles ability to disperse within the adjacent stand as determined by a biologist, the appropriate surveys and/or assessment would be conducted. The effect of the

project on the red tree vole would be minimal since no trees with, or near, nests would be disturbed. More than enough CWD would be left for the unlikely event that voles would want to move through the windthrow patch. This project is not anticipated to result in a trend toward federal listing or a loss of population viability of the red tree vole.

#### Mollusks:

There are seven survey and manage mollusk species with potential to be located within the proposed action area (see table above). These species are generally associated with the organic duff layer and moss on the floor of cool forested areas containing coarse woody debris, sword ferns, hardwood brush species and for some species, hardwood trees, especially big-leafed maple.

Those areas along the river where logs and rocks would be dumped for placement, and where equipment would access the stream may be suitable habitat for mollusks. The areas where CWD would be removed for use as instream structure would be considered suitable, albeit poor, habitat for S&M mollusks. There is plenty of suitable log material for mollusks to inhabit, although the lack of canopy cover would make the area somewhat inhospitable to mollusks.

Surveys for S&M mollusks would be conducted in those areas where activities may affect them and if any S&M species are found, the site would be managed according to Survey and Manage Standards and Guidelines. As such, the project would not result in a trend toward federal listing, or a loss of population viability of the seven mollusk species.

#### **3.6.2.3 Alternative 3**

Alternative 3 is similar to alternative 2 except that there would be no equipment allowed off of any roads. Consequently the scope of the work that would be done would be limited to the placement of logs with helicopter and felling and pulling trees that would reach the stream where they fall, with the possibility of a small amount of work where equipment can reach the stream from the road.

All of the potential impacts associated with alternative 3 are addressed in alternative 2 above. Habitat modification would be similar as in alternative 2, and disturbance would be somewhat less than alternative 2 due to greatly restricted use of heavy equipment.

#### **Cumulative Effects**

The Nestucca watershed is approximately 165,000 acres in size, of which approximately 65% is in federal ownership, 15% is private industrial forest land, 5% is managed by Oregon Dept. of Forestry and the remaining 15% is other private land, much of which is agricultural land. It is expected that the State and private industrial lands will continue to be managed with timber



production as a primary goal. The federal lands within the watershed will be managed according to the standards and guidelines for the Northwest Forest Plan, with primary emphasis on restoration and maintenance of late successional forest ecosystems.

The effects to terrestrial wildlife caused by the implementation of this fisheries enhancement project would fall into two general categories; disturbance and habitat modification. By far the greatest expected impacts would be from disturbance, especially to murrelets. With respect to other actions that may be occurring in the watershed, the disturbance that may result from this action would not be of a cumulative nature as the potential disturbance sites are spatially distinct, the disturbance duration would be relatively short (less than two weeks at any given site) and no other actions are expected to be occurring simultaneously in the project areas (see Past, Present and Reasonably Foreseeable Future Appendix 3). There is a small possibility that some sites could be disturbed in multiple years, such as the larger windthrow site where logs may be flown out with a helicopter in several different years. The likelihood of this multiple year disturbance is low due to the economic inefficiency of entering an area several times to partially complete the work.

Any cumulative effects from habitat modification would be negligible. The falling or pulling of 14-23 trees per mile of stream would leave the residual stand well within the range of natural variability for a mid- to late-seral forest. No other actions are foreseen that would change those stream-side forest to a condition where the habitat for species of concern would be negatively affected. Those areas where windthrown trees would be removed are somewhat of an unnatural condition. The windthrow had been a result of adjacent clearcutting activity, and most likely would not have occurred but for those clearcuts. It is rare that more than just small groups of healthy trees are windthrown, consequently removing a portion of those trees to another area, would not affect the utility of those areas as habitat for terrestrial wildlife.

### **3.7 Conformance With Land Use Plans, Policies, and Programs**

Alternative 1 (No Action), Alternative 2 (Proposed Action) and Alternative 3 unless otherwise noted, are in conformance with the following documents which provide the legal framework, standards, and guidelines for management of BLM lands in the Tillamook Resource Area:

- ◆ Salem District Record of Decision and Resource Management Plan, May 1995, pp. 5-6 (**ACS** Objectives), pp. 6-7, 9-10, 14 (**RR**), pp. 15-16, 18 (**LSR**), pp. 27-28 (Fish Habitat), pp. 28-33 (Special Status and SEIS Special Attention Species and Habitat), Appendix C (Best Management Practices), and Healthy Lands Standards.

**ACS** Objectives and **RR**: Alternative 2 is predicted to result in the maintenance and restoration of ACS objectives. Alternative 1 and 3 may retard some ACS objectives and thereby appears to be inconsistent with the management direction contained in the Salem District Management Plan (Chapter 3; Appendix 4; Appendix 5).

**LSR:** Alternatives 2 and 3 will improve habitat for listed fish. Due to the design features of these alternatives, effects to late-successional associated species are expected to be negligible. Both the stream-side stands and the blow down patches would continue to function as habitat for terrestrial wildlife species. (Chapter 3).

**Fish Habitat:** Alternative 2 and Alternative 3 rehabilitate and protect at risk fish stocks and their habitat. Alternative 1 may compromise the long-term viability of fish species, particularly those with a downward trend such as coho and steelhead. (Chapter 3).

**Special Status/Attention Species and Habitats:** Alternatives 2 and 3 are predicted not to contribute to the need to list or elevate their status to a higher level of concern (Chapter 3; Appendix 3). Additionally, these alternatives contain the provision to conduct required surveys to protocol and manage known sites (Chapter 2).

**Best Management Practices:** Alternatives 2 and 3 contains applicable Best Management Practices described in the RMP, Appendix C, to maintain water quality and reduce impacts to soil productivity while meeting other resource management objectives (Chapter 3).

**Healthy Lands Standard:** All the alternatives, with minor exception as previously noted, are in conformance with the Salem District RMP and the RMP has been determined to be consistent with the standards and guidelines for healthy lands at the land use planning scale and associated time lines.

- ◆ Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl, April 1994.

The Salem District RMP is consistent with the stated Record of Decision, and Standards and Guidelines, pp. B-31, C-11, C-17 (Salem District Resource Management Plan/Final Environmental Impact Statement, September, 1994, Chapter 4-96). Since Alternative 2 is consistent with the RMP, it is also consistent with the Record of Decision and Standard and Guidelines. Specifically, Alternative 2 provides for the restoration of in-stream habitat complexity and is consistent with Late-Successional Reserve objectives (Chapter 3; Appendix 2).

- ◆ Northern Coast Range Adaptive Management Area Guide, January 1997, pp. 8, 19, 25-26, 31, 34, 38, 56-57. Alternatives 2 and 3 provide for the restoration of instream habitat complexity which should assist in the maintenance of the long-term viability of the

Oregon Coast coho salmon and other fish species found in the Upper Nestucca River and its tributaries.

- ◆ Late-Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area, January 1998, pp. 40-43, 84-86, 89. The Late-Successional Reserve Assessment identified the Nestucca River as a priority watershed for fish habitat improvement. Alternatives 2 and 3 provide for the restoration and protection of at risk fish stocks and their habitat. Although these alternatives entail importing some coarse woody debris (logs) from off-site sources (blow down patches), the alternatives provide for the retention of mid- to high levels of coarse woody debris at these locations. As such, these alternatives would not affect the utility of those blow down patches as habitat for terrestrial wildlife species.
- ◆ Coastal Zone Management Act, as amended: The project area is located within Oregon's Coastal Zone boundary. The alternatives appear to be consistent with the applicable statewide planning goals identified in the Oregon Coastal Management Program.
- ◆ Nestucca River ACEC (Areas of Critical Environmental Concern) Management Plan, dated May 1984, pp 10, 14-15, and Elk Creek ACEC Management Plan, dated October 1989, p. 4. The alternatives are consistent with the management plans prepared for these two ACECs
- ◆ National Marine Fisheries Service's programmatic Biological/Conference Opinion for the Oregon Coast Province, dated June 4, 1999, and for the Upper Willamette Province, dated July 28, 1999. The Incidental Take Statement (extension) for the stated Biological Opinions was signed June 5, 2000 and is valid through September 30, 2001. Alternatives 2 and 3 are consistent with the terms and conditions of the Biological Opinions.

#### **CHAPTER 4.0 Interdisciplinary Team Members**

NAME	TITLE	RESOURCE
Andy Pampush	Wildlife Biologist	Wildlife/Mollusks
Suzanne DiGiacomo	Botanist	Botany

NAME	TITLE	RESOURCE
Dennis Worell	NRS	Soils/Hydrology
Cindy Weston	Fisheries Biologist	Fisheries
Matt Walker	NRS Fisheries	Team Leader
Kurt Heckerorth	Forestry Tech	Silviculture
Gregg Kirkpatrick	Recreation Planner	Recreation
Katrina Symons	NEPA Coordinator	NEPA and Cultural Resources

## CHAPTER 5.0 CONSULTATION and PUBLIC INVOLVEMENT

Section 7 consultation under the Endangered Species Act was discussed at a joint USFWS/NMFS - Level 1 meeting on October 7, 1999. As per the request of the Level 1 team, a field tour of the project was conducted on May 18, 2000.

The instream project work within the Nestucca Watershed is covered in the "Aquatic Habitat Projects" for ESA Section 7 Consultations for Programmatic actions dated June 4, 1999, and July 28, 1999, and an extension to this programmatic document was signed by NMFS June 5, 2000, extending these programmatic actions until September 30, 2001. A portion of the proposed action within the Willamina Creek drainage may not be covered under the programmatic, and if not, that portion would not be implemented until a BA is prepared and submitted to NMFS and a BO (Biological Opinion) is received from NMFS. (NOTE: The BO's Terms and Conditions may require minor changes in the projects design features contained on Chapter 2 of this EA).

A project specific Biological Assessment will be prepared for submission to the USFWS. Consultation will be completed prior to project implementation with any Terms and Conditions contained within the Biological Opinion being incorporated into the projects design.

Refer to section 1.6 for a discussion of the public involvement process used in the development of this assessment.

Appendix 7 will contain the Public comments, and BLM responses to those comments, received in response to the 30-day public comment period for this environmental assessment (i.e., EA Number OR 086-00-02).

## GLOSSARY

***Aquatic Conservation Strategy Objectives - ACS*** The Aquatic Conservation Strategy was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. (Also see pages 5-7 of the RMP)

***Adaptive Management Areas - AMA*** Federal land designation that is designed to encourage the development and testing of technical and social approaches to achieving desired ecological, economic and social objectives.

***Best Management Practices -BMP's*** These are general recommendations developed in the Salem District RMP to help protect specific resources e.g. water quality, soils, etc.

***core area*** A designation by ODFW (Oregon Department of Fish and Wildlife) for areas that are primary spawning or rearing areas for salmonids.

***Environmental Analysis*** A systematic process of developing reasonable alternatives and predicting the probable environmental consequences of a proposed action and the alternatives in written format.

***Environmental Assessment -EA*** A systematic analysis of site-specific activities used to determine whether such activities have a significant effect on the quality of the human environment and whether a formal environmental impact statement is required (RMP Chapter 6-4); a concise public document required by the regulations for implementing the procedural requirements of the National Environmental Policy Act (40 CFR 1508.9).

***Environmental Impact Statement - EIS*** A formal document to be filed with the Environmental Protection Agency that considers significant environmental impacts expected from implementation of a major federal action; a detailed written statement as required by section 102(2)(C) of the [National Environmental Policy] Act, as amended (40 CFR 1508.11).

***Evolutionarily Significant Unit - ESU*** A population that is reproductively isolated from other conspecific populations and represents an important component in the evolutionary legacy of the biological species.

***Interdisciplinary Team - IDT*** A group of environmental experts specializing in a range of disciplines, who conduct the environmental analysis.

***Large Woody Debris - LWD*** NMFS(National Marine Fisheries Service) defines Large Woody Debris (LWD) as pieces 24 inches in diameter and 50 feet or 1.5 channel widths long.

***Late Successional Reserve - LSR*** Federal land designation with an objective to protect and enhance conditions of late-successional and old-growth ecosystems.

***National Environmental Policy Act - NEPA*** The basic national charter for the protection of the environment. It establishes policy, sets goals (section 101), and provides means (Section 102) for carrying out the policy.

***National Marine Fisheries Service - NMFS*** A regulatory agency whose responsibility includes those marine species listed under the Endangered Species Act .

***Oregon Department of Fish and Wildlife - ODFW -*** A state agency responsible for wildlife in the state, comments on proposed actions and provides technical support as needed.

***Out migrant smolts*** - Juvenile salmonids that are going through smoltification with its characteristic physical and chemical changes for an adult life stage in saltwater.

***Right of Way - ROW*** The BLM has right of way agreements that are both discretionary and nondiscretionary to provide access to adjacent properties.

***Riparian Reserves -RR*** A federal (BLM or USFS) land allocation which overlays all other land allocations. They are lands along permanent and intermittent streams, and potentially unstable areas where special standards and guidelines direct land use.

***Salem District Record of Decision and Resource Management Plan - ROD - RMP*** A district wide planning document with recommendations, conditions and objectives for the management of BLM Salem District Lands.

***Take*** Used as defined in Section 3 of the ESA, “to harass, harm, pursue, hunt, shoot, wound, trap, capture, collect, or attempt to engage in any such conduct”. Harm is further defined as “significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding or sheltering” and harass is defined as “actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include but are not limited to, breeding, feeding or sheltering”.

***Unites States Fish and Wildlife Service - USFWS*** A federal regulatory agency whose responsibility includes those species listed under the Endangered Species Act outside the marine environment.

## Bibliography

- Bisson, P. A., J. L. Nielsen, R. A. Palmasson, and L. W. Grove. 1982. A system of naming habitat types in small streams with examples of habitat utilization by salmonids during low streamflow. Pages 62-73 in Armantrout (1982).
- Deer Creek, Panther Creek, Willamina Creek and South Yamhill Watershed Analysis BLM 1998 87pages + appendices
- Dietrich, S. H., and J. D. Smith. 1984. Bed load transport in a river meander. Water Resources Res. 20(10):1355-1380.
- Federal Register 1998. Threatened status for the Oregon Coast Evolutionarily Significant Unit of coho salmon. Vol. 63, Number 153, pp. 42587-42591.
- Nestucca Watershed Analysis USFS / BLM 1994 74pages + appendices
- Nestucca / Neskowin Watershed Council Watershed Assessment 1998 68pages + appendices
- McMahon, T. E. and G. F. Hartman. 1989. Influence of cover and complexity and current velocity on winter habitat use by juvenile coho salmon (*Oncorhynchus kisutch*). Canadian Journal of Fisheries and Aquatic Sciences. 46: 1551-1557.
- Shivrell, C. S. 1990. Role of instream rootwads as juvenile coho salmon (*Oncorhynchus kisutch*) and steelhead trout (*Oncorhynchus mykiss*) cover habitat under varying streamflows. Canadian Journal of Fisheries and Aquatic Sciences. 47:852-861.
- Sullivan, K., T. E. Lisle, C.A. Doloff, G. E. Grant, and L. M. Reid. 1987. Stream channels: the link between forests and fishes. PP. 39-97 in E. O. Salo and T. W. Cundy, Editors. Streamside Management: forest and fishery interactions. College of Forest Resources. University of Washington, Seattle. Contribution No. 57. Proceedings of a symposium held at University of Washington, February 12-14, 1986.
- Weitkamp, L. A., T. C. Wainright, G. J. Bryant, G. B. Milner, D. J. Teel, R. G. Kope and R. S. Waples. 1995. Status review of coho salmon from Washington, Oregon, and California. NOAA Technical Memorandum, NMFS-NWFSC-24.